This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

E.

300.1 S.71.

MEMOIRS

OF THE

LIFE AND WRITINGS

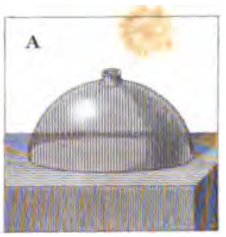
OF

BENJAMIN FRANKLIN,

LL.D. F.R.S. &c. &c.

VOL. III.

Plate I *to face Title Page*
referral to Part IV. P. 355.



Sidᵉ Hall sculpr.

Published by Henry Colburn, Conduit Street, May 1816.

MEMOIRS

OF THE

LIFE AND WRITINGS

OF

BENJAMIN FRANKLIN, LL.D.

F.R.S. &c.

MINISTER PLENIPOTENTIARY

FROM THE UNITED STATES OF AMERICA AT THE COURT OF FRANCE,

AND FOR THE TREATY OF PEACE AND INDEPENDENCE WITH GREAT BRITAIN,

&c. &c.

WRITTEN BY HIMSELF TO A LATE PERIOD,

AND CONTINUED TO THE TIME OF HIS DEATH,

BY HIS GRANDSON,

WILLIAM TEMPLE FRANKLIN.

NOW FIRST PUBLISHED FROM THE ORIGINAL MSS.

COMPRISING THE

Private Correspondence and Public Negotiations of Dr. Franklin,

AND A SELECTION FROM HIS

POLITICAL, PHILOSOPHICAL, AND MISCELLANEOUS WORKS.

LONDON:

PRINTED FOR HENRY COLBURN,

BRITISH AND FOREIGN PUBLIC LIBRARY, CONDUIT STREET.

1818.

[vol. III.]

London:
PRINTED BY A. J. VALPY,
TOOKE'S COURT, CHANCERY LANE.
1818.

PREFACE

TO THE SELECT WRITINGS.

WITH this Volume the Editor conceives that he has completely redeemed his pledge to the Public, and faithfully discharged his trust as the conservator of Dr. Franklin's literary remains.

It is a common complaint that the reputation of men of eminence in the world of letters suffers by their posthumous works; nothing however of that kind is to be apprehended in regard to the present collection, for many of the fugitive Essays here assembled, and the original Pieces now for the first time brought to public view, are directly referred to in the preceding MEMOIRS and CORRESPONDENCE as elucidatory of particular transactions, or documents of authority for the confirmation of the truth of what is there asserted.

But independently of a consideration which is sufficient to free this supplementary Volume from the charge of being supererogatory, the several tractates which make up its contents have all a paramount claim to preservation in their present form, on account of their intrinsic merits and relative importance, as connected with the personal history, character, and pursuits, of a man who never adopted any theory but with a view to practical experience, and who, in the true spirit of philosophy, applied all his speculations to objects of general utility.

It would, therefore, have been an act of culpable negligence, to have left even the lightest productions of such a mind to float down the

stream of time, subject to all its fluctuations, and liable to be lost or perverted amidst the perpetual changes which take place in human concerns.

Under the sense of this obligation has the present selection been made, as well to fulfil the promise given in the general title, as to supply that minute account of the Life and Writings of the Author, which has hitherto been so anxiously looked for.

For the sake of uniformity and perspicuity, the papers have been distributed into a systematic arrangement according to their respective subjects, or the connexion which they bear to each other. Those which relate immediately to the public character of Dr. Franklin are brought together in the First Part, which may therefore be considered as exhibiting the rise and progress of the American Republic, from its incipient state of colonial industry and dependence, to the vigor of an internal polity, and the power of a consolidated empire. Here the philosopher, the historian, and the statesman, will find materials for the exercise of profound observation, upon the minute causes, and apparently fortuitous events, which combine in the germination of small but active communities, till they have attained the rank and influence of mighty nations.

Under the Second Part are disposed a number of Essays of a more variegated description, connected with general policy, economy, and commerce, subjects in the discussion of which the felicitous genius of this great man shone with such distinguished lustre, as to render his practical remarks, inquiries, and even casual hints on local topics, valuable for the direct tendency which they had, in common with his more elaborate writings, to promote the welfare of society.

The Third Part is entirely miscellaneous, being composed of papers on

religious and moral subjects, interspersed with a variety of sententious remarks or aphorisms, calculated to make a fixed impression on the mind, and, by their simplicity of operation, to meliorate the condition of mankind in the removal or correction of evils which evidently obstruct the progress of human improvement. The third section of this part, intitled "Bagatelles," is of a sprightlier cast, and displays the cheerfulness of temper which formed so striking a feature in the character of Dr. Franklin, and uniformly enlivened his conversation amidst the cares of business and the infirmities of old age. The origin and design of these lively effusions are explained in a prefatory note, which it is hoped will prove an ample apology, if any such be necessary, for their insertion in this collection.

The Fourth and last Part comprises a selection of letters and papers on philosophical subjects.

At an early period of Dr. Franklin's career, as a man of science, he occasionally imparted to some of his most intimate acquaintance in England, accounts of the discoveries made by him at Philadelphia; and though these communications were far from being intended for the public eye, the persons to whom they were addressed had a higher opinion of them than the Author, in consequence of which they were printed at London, under the title of "Experiments and Observations on Electricity, made at Philadelphia, with Letters and Papers on Philosophical Subjects." That the partiality of friendship had not over-rated the value of these papers, was quickly made evident by the reception which they experienced, not only in this country,[1] but on the continent

[1] Five editions of the same 4to were printed in London previous to 1775.

of Europe, where they were translated into several languages, and by extending the fame of the Author, greatly enlarged the number of his correspondents in different parts of the world. Thus brought as it were, without his own consent, into the circle of the learned, he continued at intervals to prosecute the philosophical pursuits which had crowned him with honor, and to communicate the particulars of his researches to his scientific friends, who received them with avidity. It merits observation, however, that notwithstanding the high eminence which Dr. Franklin attained as an experimentalist, he in reality may be said to have only made philosophy the amusement of his leisure hours, in which it afforded him a pleasing recreation after a variety of more laborious occupations.

Though some of the Essays contained under this head have already appeared, by far the greater portion of the contents of this part, (among which are several of the latest and most ingenious of Dr. Franklin's philosophical Writings,) are now for the first time printed from his own manuscripts.

In conclusion, the Editor trusts that the Volume which now closes his account with the public will meet with the same favorable reception as the two that have preceded it; and that the whole will prove a lasting monument commemorative of the virtues and talents of a man who, in every character, whether as a humble individual or a public diplomatist, as a philosophical inquirer or the legislator of an enlightened nation, constantly proved throughout his long and eventful career, that he estimated his extraordinary talents of no other value than as enabling him to promote, as far as in him lay, the happiness of all mankind.

London, July 1818.

SELECT

POLITICAL,

Philosophical and Miscellaneous

WRITINGS

OF

BENJAMIN FRANKLIN,

LL.D. F.R.S. &c. &c.

PUBLISHED FROM THE ORIGINALS.

CONTENTS.

PART I.
AMERICAN POLITICS.

SECTION I.

AMERICAN POLITICS, PRIOR TO THE INDEPENDENCE OF THE UNITED STATES.

		Page
ALBANY PAPERS,	Reasons and motives on which the plan of Union was formed	1
	Reasons against partial Unions	3
	Plan of a proposed Union of the several Colonies of Massachusetts Bay, New Hampshire, Connecticut, Rhode Island, &c. for their mutual defence and security, and for extending the British Settlements in North America	4
	Doctor Franklin's remarks on the foregoing plan	19
1st Letter to Governor Shirley, concerning the imposition of direct Taxes upon the Colonies, without their consent		20
2d Letter on the same subject		21
3d Letter on the same subject		25
Plan for settling two Western Colonies in North America, with reasons for the plan		27
Remarks and facts relative to the American Paper Money		34
Causes of the American Discontents before 1768		43
Queries from Mr. Strahan, with Dr. Franklin's Answers		51
State of the Constitution of the Colonies, by Governor Pownall, with remarks by Dr. Franklin		59
Corollaries from the foregoing principles		61
Preface by the British Editor (Dr. Franklin) to the Votes and Proceedings of the Freeholders, and other inhabitants of the town of Boston, in town-meeting assembled		66
Rules for reducing a great Empire to a small one, presented to a late Minister, when he entered upon his administration		69
Paper written in England by Dr. Franklin, to discourage the intended Act for preventing Emigration		77
On sending Felons to America		82
Vindication and offer from Congress to Parliament in 1775		84

SECTION II.

AMERICAN POLITICS, SUBSEQUENT TO THE INDEPENDENCE OF THE UNITED STATES IN 1776.

	Page
A Dialogue between Britain, France, Spain, Holland, Saxony, and America	89
Comparison of Great Britain and America as to Credit in 1777	92
A Catechism relative to the National Debt	97
On the Paper-Money of the United States of America	98
Retort Courteous	101

PART II.

GENERAL POLITICS AND COMMERCE.

Observations concerning the Increase of Mankind, Peopling of Countries, &c.	110
Remarks on some of the foregoing Observations, showing particularly the effect which Manners have on Population. By R. Jackson, Esq.	115
On the price of Corn, and management of the Poor	123
On Smuggling, and its various species	129
Observations on War	131
On the laboring Poor	133
Plan for benefiting distant unprovided Countries	136
On the Institution in Holland to prevent Poverty	139
Positions to be examined	140
Provisions made in China against Famine	142
Note respecting Trade and Manufactures	143
Principles of Trade	145
Reflections on Coin in general	163
Thoughts concerning the Sugar Islands	168
Remarks written by Dr. Franklin, with a pencil, on the margin of a Report of Judge Foster, containing that Judge's Arguments in favor of the right of Impressing Seamen	169
On the Criminal Laws, and the practice of Privateering	175
On the Elective Franchises enjoyed by the small Boroughs in England, with an enclosed paper addressed to Sir Charles Wyvill	180
Letter from Sir C. Wyvill in answer to the foregoing	183
Militia preferable to Regular Troops	184
Project for preventing Wars	185
Some good Whig Principles	185

PART III.

MISCELLANIES.

SECTION I.

RELIGIOUS SUBJECTS.

	Page
Articles of Belief and Acts of Religion, in two parts	187
A Parable against Persecution, in imitation of Scriptural language	193
On Persecution in former ages—Of Dissenters—State of Toleration, &c.	194
A Parable on Brotherly Love	198

SECTION II.

VARIOUS SUBJECTS.

The Busy-Body, No. 1.	200
——— No. 2.	202
——— No. 3.	204
——— No. 4.	207
To the Busy-Body	208
The Busy-Body, No. 5.	211
——— No. 6.	217
Dialogue between Philocles and Horatio, meeting accidentally in the fields, concerning Virtue and Pleasure	221
A Second Dialogue by the same	225
Public Men	229
Self-denial not the essence of Virtue	233
On the Usefulness of the Mathematics	235
On true Happiness	238
On Discoveries	239
The Waste of Life	242
Advice to a young Tradesman	245
Hints to those who would be rich	246
The Way to make Money plenty in every Man's pocket	247
The Way to Wealth, *(Poor Richard's Almanac)*	248
A Thought concerning the Medals to be struck by order of Congress	255
Precautions to be used by those who are about to undertake a Sea Voyage	255
Information to those who would remove to America	259

Page
Internal state of America in 1784 - - - - - - - 267
Remarks concerning the Savages of North America, 1784 - - - - 271
Observations on Mayz, or Indian Corn - - - - - - - 276
Sketch of an English School - - - - - - - - 278
Observations relative to the Intentions of the Original Founders of the Academy in Philadelphia - - - - - - - - - - 283
Hints for consideration respecting the Orphan School House in Philadelphia - - 302
An Account of the supremest Court of Judicature in Pennsylvania, viz. *The Court of the Press* - - - - - - - - - 303

SECTION III.

BAGATELLES.

[*The Letters, Essays, &c. contained in this Section, were chiefly written by Dr. Franklin for the amusement of his intimate society in London and Paris; and were by himself actually collected in a small port-folio, endorsed as above. Several of the pieces were either originally written in French, or afterwards translated by him into that language, by way of exercise.*]

The Levée - - - - - - - - - - - 307
Proposed New Version of the Bible - - - - - - - - 308
Part of the first chapter of Job, modernised - - - - - - 309
Apologue - - - - - - - - - - - 309
Poems addressed to Miss Georgiana Shipley, on the Loss of her American Squirrel - 311
The Art of procuring Pleasing Dreams - - - - - - - 312
The Ephemera, an emblem of Human Life - - - - - - 316
The Whistle - - - - - - - - - - 317
A Petition to those who have the Superintendence of Education - - - - 319
The handsome and deformed Leg - - - - - - - 320
Morals of Chess - - - - - - - - - - 322
Conte, and Translation - - - - - - - - - 325
An Arabian Tale - - - - - - - - - - 326
Dialogue between Franklin and the Gout - - - - - - - 327
Letters to Madame Helvetius - - - - - - - - 332
An humble Petition presented to Madame Helvetius by her Cats; with an English Translation 340
Letter to the Abbé de la Roche, with a Song - - - - - - 345
On Wine, addressed to the Abbé Morellet - - - - - - 347
An Economical Project - - - - - - - - - 350

PART IV.

PHILOSOPHICAL SUBJECTS.

	Page
Description of a new Musical Instrument composed of Glasses, called the "Armonica," addressed to Father Beccaria	355
Answer to some Queries of Monsieur Dubourg respecting the Armonica	359
On Fire	359
Conjectures on the nature of Fire	361
Curious instance of the effect of Oil on Water	363
On the Electricity of Fogs	364
Conjecture as to Elephants being natives of America	366
On the Colica Pictorum, and pernicious use of Lead in Distilleries. To Dr. Evans	367
On Chimnies, &c. to Lord Kaimes	368
On Astronomical Subjects, Electricity, &c.	370
On the free use of Air. To Monsieur Dubourg	374
Of Ventilation, &c. written by Mr. Small, the surgeon, but containing Dr. Franklin's observations on the subject	375
On Rain; in a letter to Dr. Percival	386
Report on Lightning Conductors for the Powder Magazines at Purfleet	388
Experiments, Observations, and Facts, relative to the utility of long pointed Rods, for securing Buildings from damage by strokes of Lightning	391
On the Spots in the Sun, a new hypothesis	398
On the Analogy between Magnetism and Electricity	400
On the choice of Glass for the Leyden Experiment	402
On the Death of persons struck by Lightning	403
On the mode of rendering Meat tender by Electricity	405
On the nature of Sea Coal	407
Answers to some Inquiries concerning the Art of Swimming	407
Stoves for Public Buildings; in a letter to Dr. Cooper	409
Preparatory Notes and Hints for writing a paper concerning what is called *Catching Cold*	411
Letter from Mr. W. Small, on the same subject	418
On the causes of Colds	420
On the same subject; in a letter to Dr. Rush	421
Moist Air not unhealthy. To Dr. Percival	422
On Lightning Conductors. To Mr. Winthorp	423
On the stilling of Waves by means of Oil; extracted from letters between Dr. Franklin, Dr. Brownrigg, and the Rev. Mr. Farish	425
Attempt to explain the effects of Lightning on the vane of the Steeple of a Church in Cremona; in a letter to Dr. Ingenhausz	433

Page
On Electricity—The Leyden Bottle, and M. Volta's Experiment - - - - 439
Suppositions and Conjectures towards forming an hypothesis for the explanation of the Aurora Borealis - - - - - - - - - - 440
On a new-invented Stove. To the Marquis Turgot - - - - - - - 444
On the long retention of Infection in Dead Bodies after Sepulture, &c. To Monsieur Vicq D'Azyr - - - - - - - - - - 445
On Conductors of Heat, &c. To Dr. Ingenhausz - - - - - - - 447
Account of Toads found in the solid of a Stone-quarry - - - - - 449
Copy of a Letter from Sir John Pringle to Mr. A. Small, annexed to the foregoing - - 450
Queries on Electricity, from Dr. Ingenhausz, and Dr. Franklin's answers - - - 451
On the Theory of the Earth, and its Magnetism - - - - - - - 454
On an Electrical Experiment - - - - - - - - - 457
On the shock by the Electric Bottle, and the density of Glass - - - - 458
To Mr. Nairne on his Patent Electrical Machine, and the effects of Lightning on the Eyes of Animals killed by it - - - - - - - - - - 459
Proposal for a slowly sensible Hygrometer for certain purposes; addressed to Mr. Nairne - 459
On the Comet seen in Yorkshire, 1783. To Mr. Rittenhause - - - - 464
On Balloons, and their probable importance; in a letter to Dr. Ingenhausz - - - 464
On Fire, addressed to B. Vaughan - - - - - - - - - 466
Meteorological Imaginations and Conjectures - - - - - - - 466
Physical and Meteorological Conjectures, Observations, and Suppositions - - - 469
On Electricity—A three-wheeled Clock—Gravitation of bodies affected by the Sun and Moon—Conjectures on Tides, &c. - - - - - - - - 475
On the causes and cure of Smoky Chimnies - - - - - - - 479
New method of Warming and keeping Rooms Warm; in a letter to James Bowdoin - 499
Description of a new Stove for burning Pit-coal, and consuming all its Smoke; written at Sea, 1785. - - - - - - - - - - - 505
On Improvements in Navigation; addressed to Monsieur Le Roy - - - - 518
Remarks on the Gulph Stream - - - - - - - - - 542
On the pernicious quality of Lead, &c. addressed to B. Vaughan, Esq. - - - 551
On Thermometers - - - - - - - - - - 554
On Balloons,—Pigeons killed by Lightning,—addressed to Mons. Le Roy - - - 555
On the Utility of Lightning Conductors, addressed to M. Landriani - - - 555
On the Earth's Magnetism, addressed to the Hon. J. Bowdoin - - - - 556
Process to be observed in making large Sheets of Paper in the Chinese manner - - 558
New Theory of Light, addressed to David Rittenhause, Esq. - - - - 560

MEMOIRS

OF

BENJAMIN FRANKLIN.

WRITINGS.

PART I.

AMERICAN POLITICS.

SECTION I.

AMERICAN POLITICS PRIOR TO THE INDEPENDENCE OF THE UNITED STATES.

ALBANY PAPERS.

[*Referred to in* MEMOIRS OF THE LIFE, *Part* II. *p.* 105. 4*to Edit.*]

Containing, I. *Reasons and Motives on which the* PLAN *of* UNION *for the* COLONIES *was formed;*—II. *Reasons against partial Unions;*—III. *And the Plan of Union drawn by Benjamin Franklin, and unanimously agreed to by the Commissioners from New Hampshire, Massachusett's Bay, Rhode Island, New Jersey, Maryland, and Pennsylvania, met in Congress at Albany, in July* 1754, *to consider of the best Means of defending the King's Dominions in America, &c. a War being then apprehended; with the Reasons or Motives for each Article of the Plan.*

I. *Reasons and Motives on which the Plan of Union was formed.*

THE commissioners from a number of the northern colonies being met at Albany, and considering the difficulties that have always attended the most necessary general measures for the common defence, or for the annoyance of

the enemy, when they were to be carried through the several particular assemblies of all the colonies; some assemblies being before at variance with their governors or councils, and the several branches of the government not on terms of doing business with each other; others taking the opportunity, when their concurrence is wanted, to push for favorite laws, powers, or points, that they think could not at other times be obtained, and so creating disputes and quarrels; one assembly waiting to see what another will do, being afraid of doing more than its share, or desirous of doing less; or refusing to do any thing, because its country is not at present so much exposed as others, or because another will reap more immediate advantage; from one or other of which causes, the assemblies of six (out of seven) colonies applied to, had granted no assistance to Virginia, when lately invaded by the French, though purposely convened, and the importance of the occasion earnestly urged upon them; considering moreover, that one principal encouragement to the French, in invading and insulting the British American dominions, was their knowledge of our disunited state, and of our weakness arising from such want of union; and that from hence different colonies were, at different times, extremely harassed, and put to great expence both of blood and treasure, who would have remained in peace, if the enemy had had cause to fear the drawing on themselves the resentment and power of the whole; the said commissioners, considering also the present incroachments of the French, and the mischievous consequences that may be expected from them, if not opposed with our force, came to an unanimous resolution,—*That an union of the colonies is absolutely necessary for their preservation.*

The manner of forming and establishing this union was the next point. When it was considered, that the colonies were seldom all in equal danger at the same time, or equally near the danger, or equally sensible of it; that some of them had particular interests to manage, with which an union might interfere; and that they were extremely jealous of each other: it was thought impracticable to obtain a joint agreement of all the colonies to an union, in which the expence and burthen of defending any of them should be divided among them all: and if ever acts of assembly in all the colonies could be obtained for that purpose, yet as any colony, on the least dissatisfaction, might repeal its own act and thereby withdraw itself from the union, it would not be a stable one, or such as could be depended on: for if only one colony should, on any disgust, withdraw itself, others might think it unjust and unequal that

they, by continuing in the union, should be at the expence of defending a colony, which refused to bear its proportionable part, and would therefore, one after another, withdraw, till the whole crumbled into its original parts. Therefore the commissioners came to another previous resolution, viz. *That it was necessary the union should be established by act of parliament.*

They then proceeded to sketch out a *plan of union*, which they did in a plain and concise manner, just sufficient to show their sentiments of the kind of union that would best suit the circumstances of the colonies, be most agreeable to the people, and most effectually promote his majesty's service and the general interest of the British empire. This was respectfully sent to the assemblies of the several colonies for their consideration, and to receive such alterations and improvements as they should think fit and necessary; after which it was proposed to be transmitted to England to be perfected, and the establishment of it there humbly solicited.

This was as much as the commissioners could do.[1]

II. *Reasons against partial Unions.*

It was proposed by some of the commissioners, to form the colonies into two or three distinct unions; but for these reasons that proposal was dropped even by those that made it: viz.

1. In all cases where the strength of the whole was necessary to be used against the enemy, there would be the same difficulty in degree, to bring the several unions to unite together, as now the several colonies; and consequently the same delays on our part, and advantage to the enemy.

2. Each union would separately be weaker than when joined by the whole, obliged to exert more force, be oppressed by the expence, and the enemy less deterred from attacking it.

3. Where particular colonies have *selfish views*, as New York with regard to Indian trade and lands; or are less exposed, being covered by others, as New Jersey, Rhode Island, Connecticut, Maryland; or have particular whims and prejudices against warlike measures in general, as Pennsylvania, where the

[1] Dr. Davenant was so well convinced of the expediency of an union of the colonies, that he recites, at full length, a plan contrived, as he says, with good judgment, for the purpose. Davenant, Vol. I. p. 40, 41, of Sir C. Whitworth's edition. B. V.—*This, and other notes with similar initials, are those of Mr. Benjamin Vaughan.*

Quakers predominate; such colonies would have more weight in a partial union, and be better able to oppose and obstruct the measures necessary for the general good, than where they are swallowed up in the general union.

4. The Indian trade would be better regulated by the union of the whole than by partial unions. And as Canada is chiefly supported by that trade, if it could be drawn into the hands of the English (as it might be if the Indians were supplied on moderate terms, and by honest traders appointed by and acting for the public) that alone would contribute greatly to the weakening of our enemies.

5. The establishing of new colonies westward on the Ohio and the lakes (a matter of considerable importance to the increase of British trade and power, to the breaking that of the French, and to the protection and security of our present colonies,) would best be carried on by a joint union.

6. It was also thought, that by the frequent meeting-together of commissioners or representatives from all the colonies, the circumstances of the whole would be better known, and the good of the whole better provided for; and that the colonies would by this connection learn to consider themselves, not as so many independent states, but as members of the same body; and thence be more ready to afford assistance and support to each other, and to make diversions in favor even of the most distant, and to join cordially in any expedition for the benefit of all against the common enemy.

These were the principal reasons and motives for forming the plan of union as it stands. To which may be added this, that as the union of the * * * * *

[The remainder of this article is missing.]

III. *Plan of a proposed Union of the several Colonies of Massachusett's Bay, New Hampshire, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Virginia, North Carolina, and South Carolina, for their mutual Defence and Security, and for extending the British Settlements in North America, with the Reasons and Motives for each Article of the Plan* [*as far as could be remembered.*]

It is proposed—That humble application be made for an act of parliament of Great Britain, by virtue of which one general government may be formed in America, including all the said colonies, within and under which government

each colony may retain its present constitution, except in the particulars wherein a change may be directed by the said act, as hereafter follows.[1]

PRESIDENT GENERAL, AND GRAND COUNCIL.

That the said general government be administered by a president general, to be appointed and supported by the crown; and a grand council, to be chosen by the representatives of the people of the several colonies met in their respective assemblies.

It was thought that it would be best the president general should be supported as well as appointed by the crown; that so all disputes between him and the grand council concerning his salary might be prevented; as such disputes have been frequently of mischievous consequence in particular colonies, especially in time of public danger. The quit-rents of crown-lands in America might in a short time be sufficient for this purpose.—The choice of members for the grand council is placed in the house of representatives of each government, in order to give the people a share in this new general government, as the crown has its share by the appointment of the president general.

But it being proposed by the gentlemen of the council of New York, and some other counsellors among the commissioners, to alter the plan in this particular, and to give the governors and council of the several provinces a share in the choice of the grand council, or at least a power of approving and confirming or of disallowing the choice made by the house of representatives, it was said:

"That the government or constitution proposed to be formed by the plan, consists of two branches; a president general appointed by the crown, and a council chosen by the people, or by the people's representatives, which is the same thing.

"That by a subsequent article, the council chosen by the people can effect nothing without the consent of the president general appointed by the crown; the crown possesses therefore full one half of the power of this constitution.

"That in the British constitution, the crown is supposed to possess but one third, the lords having their share.

"That this constitution seemed rather more favorable for the crown.

---

[1] The reader may perceive, by the difference of the Italic and Roman type, which is the *text* of the plan, and which the *reasons and motives* mentioned in the title. They are thus printed for perspicuity and for convenience.

"That this is essential to English liberty, [that] the subject should not be taxed but by his own consent, or the consent of his elected representatives.

"That taxes to be laid and levied by this proposed constitution will be proposed and agreed to by the representatives of the people, if the plan in this particular be preserved:

"But if the proposed alteration should take place, it seemed as if matters may be so managed, as that the crown shall finally have the appointment not only of the president general, but of a majority of the grand council; for seven out of eleven governors and councils are appointed by the crown:

"And so the people in all the colonies would in effect be taxed by their governors.

"It was therefore apprehended, that such alterations of the plan would give great dissatisfaction, and that the colonies could not be easy under such a power in governors, and such an infringement of what they take to be English liberty.

"Besides, the giving a share in the choice of the grand council would not be equal with respect to all the colonies, as their constitutions differ. In some, both governor and council are appointed by the crown. In others, they are both appointed by the proprietors. In some, the people have a share in the choice of the council; in others, both government and council are wholly chosen by the people. But the house of representatives is every where chosen by the people; and therefore, placing the right of choosing the grand council in the representatives is equal with respect to all.

"That the grand council is intended to represent all the several houses of representatives of the colonies, as a house of representatives doth the several towns or counties of a colony. Could all the people of a colony be consulted and unite in public measures, a house of representatives would be needless: and could all the assemblies conveniently consult and unite in general measures, the grand council would be necessary.

"That a house of commons or the house of representatives, and the grand council, are thus alike in their nature and intention. And as it would seem improper that the king or house of lords should have a power of disallowing or appointing members of the house of commons;—so likewise, that a governor and council appointed by the crown should have a power of disallowing or appointing members of the grand council, (who, in this constitution, are to be the representatives of the people.)

"If the governors and councils therefore were to have a share in the choice

of any that are to conduct this general government, it should seem more proper that they chose the president general. But this being an office of great trust and importance to the nation, it was thought better to be filled by the immediate appointment of the crown.

"The power proposed to be given by the plan to the grand council is only a concentration of the powers of the several assemblies in certain points for the general welfare; as the power of the president general is of the powers of the several governors in the same points.

"And as the choice therefore of the grand council by the representatives of the people, neither gives the people any new powers, nor diminishes the power of the crown, it was thought and hoped the crown would not disapprove of it."

Upon the whole, the commissioners were of opinion, that the choice was most properly placed in the representatives of the people.

ELECTION OF MEMBERS.

That within months after the passing such act, the house of representatives, that happen to be sitting within that time, or that shall be especially for that purpose convened, may and shall choose members for the grand council, in the following proportion, that is to say,

Massachusett's Bay	7
New Hampshire	2
Connecticut	5
Rhode Island	2
New York	4
New Jerseys	3
Pennsylvania	6
Maryland	4
Virginia	7
North Carolina	4
South Carolina	4
	48

It was thought, that if the least colony was allowed two, and the others in proportion, the number would be very great and the expence heavy; and that

less than two would not be convenient, as a single person, being by any accident prevented appearing at the meeting, the colony he ought to appear for would not be represented. That as the choice was not immediately popular, they would be generally men of good abilities for business, and men of reputation for integrity; and that forty-eight such men might be a number sufficient. But, though it was thought reasonable, that each colony should have a share in the representative body in some degree, according to the proportion it contributed to the general treasury: yet the proportion of wealth or power of the colonies is not to be judged by the proportion here fixed; because it was at first agreed, that the greatest colony should not have more than seven members, nor the least less than two: and the settling these proportions between these two extremes was not nicely attended to, as it would find itself, after the first election from the sums brought into the treasury, as by a subsequent article.

PLACE OF FIRST MEETING.

—who shall meet for the first time at the city of Philadelphia in Pennsylvania, being called by the president-general as soon as conveniently may be after his appointment.

Philadelphia was named as being the nearer the centre of the colonies, where the commissioners would be well and cheaply accommodated. The high-roads, through the whole extent, are for the most part very good, in which forty or fifty miles a day may very well be and frequently are travelled. Great part of the way may likewise be gone by water. In summer time, the passages are frequently performed in a week from Charles Town to Philadelphia and New York; and from Rhode Island to New York through the sound, in two or three days; and from New York to Philadelphia, by water and land, in two days, by stage boats and wheel-carriages that set out every other day. The journey from Charles Town to Philadelphia may likewise be facilitated by boats running up Chesapeak Bay three hundred miles. But if the whole journey be performed on horseback, the most distant members (viz. the two from New Hampshire and from South Carolina) may probably render themselves at Philadelphia in fifteen or twenty days; the majority may be there in much less time.

NEW ELECTION.

That there shall be a new election of the members of the grand council every three years; and on the death or resignation of any member, his place shall be supplied by a new choice at the next sitting of the assembly of the colony he represented.

Some colonies have annual assemblies, some continue during a governor's pleasure; three years was thought a reasonable medium, as affording a new member time to improve himself in the business, and to act after such improvement; and yet giving opportunities, frequent enough, to change him, if he has misbehaved.

PROPORTION OF MEMBERS AFTER THE FIRST THREE YEARS.

That after the first three years, when the proportion of money arising out of each colony to the general treasury can be known, the number of members to be chosen for each colony shall, from time to time, in all ensuing elections, be regulated by that proportion (yet so as that the number to be chosen by any one province be not more than seven, nor less than two).

By a subsequent article it is proposed, that the general council shall lay and levy such general duties, as to them may appear most equal and least burthensome, &c. Suppose, for instance, they lay a small duty or excise on some commodity imported into or made in the colonies, and pretty generally and equally used in all of them; as rum perhaps, or wine: the yearly produce of this duty or excise, if fairly collected, would be in some colonies greater, in others less, as the colonies are greater or smaller. When the collector's accounts are brought in, the proportions will appear; and from them it is proposed to regulate the proportion of representatives to be chosen at the next general election, within the limits however of seven and two. These numbers may therefore vary in course of years, as the colonies may in the growth and increase of people. And thus the quota of tax from each colony would naturally vary with its circumstances; thereby preventing all disputes and dissatisfactions, about the just proportions due from each; which might otherwise produce pernicious consequences, and destroy the harmony and good agreement that ought to subsist between the several parts of the union.

MEETINGS OF THE GRAND COUNCIL, AND CALL.

That the grand council shall meet once in every year, and oftener if occasion require, at such time and place as they shall adjourn to at the last preceding meeting, or as they shall be called to meet at by the president general on any emergency; he having first obtained in writing the consent of seven of the members to such call, and sent due and timely notice to the whole.

It was thought, in establishing and governing new colonies or settlements, regulating Indian trade, Indian treaties, &c. there would be every year sufficient business arise to require at least one meeting, and at such meeting many things might be suggested for the benefit of all the colonies. This annual meeting may either be at a time or place certain, to be fixed by the president general and grand council at their first meeting; or left at liberty, to be at such time and place as they shall adjourn to, or be called to meet at by the president general.

In time of war it seems convenient, that the meeting should be in that colony, which is nearest the seat of action.

The power of calling them on any emergency seemed necessary to be vested in the president general; but that such power might not be wantonly used to harass the members, and oblige them to make frequent long journeys to little purpose, the consent of seven at least to such call was supposed a convenient guard.

CONTINUANCE.

That the grand council have power to choose their speaker; and shall neither be dissolved, prorogued, nor continued sitting longer than six weeks at one time, without their own consent or the special command of the crown.

The speaker should be presented for approbation; it being convenient, to prevent misunderstandings and disgusts, that the mouth of the council should be a person agreeable, if possible, both to the council and president general.

Governors have sometimes wantonly exercised the power of proroguing or continuing the sessions of assemblies, merely to harass the members and compel a compliance; and sometimes dissolve them on slight disgusts. This it was feared might be done by the president general, if not provided against:

and the inconvenience and hardship would be greater in the general government than in particular colonies, in proportion to the distance the members must be from home, during sittings, and the long journies some of them must necessarily take.

MEMBER'S ALLOWANCE,

That the members of the grand council shall be allowed for their service ten shillings sterling per diem, during their session and journey to and from the place of meeting; twenty miles to be reckoned a day's journey.

It was thought proper to allow *some* wages, lest the expense might deter some suitable persons from the service;—and not to allow *too great* wages, lest unsuitable persons should be tempted to cabal for the employment, for the sake of gain. Twenty miles was set down as a day's journey, to allow for accidental hindrances on the road, and the greater expenses of travelling than residing at the place of meeting.

ASSENT OF PRESIDENT GENERAL, AND HIS DUTY.

That the assent of the president general be requisite to all acts of the grand council; and that it be his office and duty to cause them to be carried into execution.

The assent of the president general to all acts of the grand council was made necessary, in order to give the crown its due share of influence in this government, and connect it with that of Great Britain. The president general, besides one half of the legislative power, hath in his hands the whole executive power,

POWER OF PRESIDENT GENERAL, AND GRAND COUNCIL. TREATIES OF PEACE AND WAR.

That the president general, with the advice of the grand council, hold or direct all Indian treaties in which the general interest of the colonies may be concerned; and make peace or declare war with Indian nations.

The power of making peace or war with Indian nations is at present supposed to be in every colony, and is expressly granted to some by charter, so that no new power is hereby intended to be granted to the colonies. But as,

in consequence of this power, one colony might make peace with a nation that another was justly engaged in war with; or make war on slight occasions without the concurrence or approbation of neighboring colonies, greatly endangered by it; or make particular treaties of neutrality in case of a general war, to their own private advantage in trade, by supplying the common enemy; of all which there have been instances—it was thought better, to have all treaties of a general nature under a general direction: that so the good of the whole may be consulted and provided for.

INDIAN TRADE.

That they make such laws as they judge necessary for regulating all Indian trade.

Many quarrels and wars have arisen between the colonies and Indian nations, through the bad conduct of traders, who cheat the Indians after making them drunk, &c. to the great expense of the colonies both in blood and treasure. Particular colonies are so interested in the trade as not to be willing to admit such a regulation as might be best for the whole; and therefore it was thought best under a general direction.

INDIAN PURCHASES.

That they make all purchases, from Indians for the crown, of lands not now within the bounds of particular colonies, or that shall not be within their bounds when some of them are reduced to more convenient dimensions.

Purchases from the Indians, made by private persons, have been attended with many inconveniences. They have frequently interfered, and occasioned uncertainty of titles, many disputes, and expensive law-suits, and hindered the settlement of the land so disputed. Then the Indians have been cheated by such private purchases, and discontent and wars have been the consequence. These would be prevented by public fair purchases.

Several of the colony charters in America extend their bounds to the South Sea, which may be perhaps three or four thousand miles in length to one or two hundred miles in breadth. It is supposed they must in time be reduced to dimensions more convenient for the common purposes of government.[1]

---

[1] Mr. Baron Maseres, in page 200 of his Account of the Proceedings at Quebec, for obtaining an Assembly, has the following hint: "The vast enlargement of the province of Quebec, by adding to it a new territory that contains, according to Lord Hillsborough's estimation of it, five hundred and

Very little of the land in those grants is yet purchased of the Indians.

It is much cheaper to purchase of them, than to take and maintain the possession by force: for they are generally very reasonable in their demands for land;[1] and the expense of guarding a large frontier against their incursions is vastly great: because all must be guarded, as we know not where or when *to expect them.*[2]

---

eleven millions of acres (that is, more land than Spain, Italy, France, and Germany put together, and most of it good land), is a measure that would require an ample discussion."—That the reader may not suspect that these dimensions were convenient for uncommon purposes of government, I shall quote the motives assigned upon this occasion by the act regulating the government of Quebec. "By the arrangements made by the royal proclamation, a very large extent of country, within which there were several colonies and settlements of the subjects of France, who claimed to remain therein under the faith of the said treaty, was left without any provision being made for the administration of civil government therein: *i. e.* a few Indian traders were a pretext for this appropriation of a tract of country, which, according to the minister's estimate, was more than thirteen times larger than England and Wales united, nearly one hundred and twenty-eight times larger than Jamaica, almost one-eighth part of Europe, and considerably more than one thirty-eighth part of the whole habitable earth (comparing it with the several calculations in The Political Survey of Great Britain, by Dr. Campbell, and in that of Jamaica, by Mr. Long). "Now *all* the inhabitants of the province of Quebec," says this very act, "amounted at the conquest to above sixty-five thousand only, professing the religion of the church of Rome, and enjoying an established form of constitution and system of laws." B. V.

[1] "Dr. Franklin (says Mr. Kalm the Swede) and several other gentlemen, frequently told me, that a powerful Indian, who possessed Rhode Island, had sold it to the English for a pair of spectacles; it is large enough for a prince's domain, and makes a peculiar government at present. This Indian knew how to set a true value upon a pair of spectacles: for undoubtedly if those glasses were not so plentiful, and only a few of them could be found, they would, on account of their great use, bear the same price with diamonds." See Kalm's Travels into North America, Vol. I. p. 386, 387. "At the time when the Swedes first arrived, they bought land at a very inconsiderable price. For a piece of baize, or a pot full of brandy, or the like, they could get a piece of ground, which at present would be worth more than 290*l.* sterling." Ib. Vol. II. p. 118.—The truth is, that the Indians considered their lands as mere *hunting-manors*, and not as farms. B. V.

[2] To guard against the incursions of the Indians, a plan was sent over to America (and, as I think, by authority) suggesting the expediency of clearing away the woods and bushes from a tract of land, a mile in breadth, and extending along the back of the colonies. Unfortunately, besides the large expenses of this undertaking (which, if one acre cost 2*d.* sterling, and six hundred and forty acres make a square mile, is 128,000*l.* *first cost* for every 100 miles), it was forgotten, that the Indians, like other people, know the difference between day and night, and that a mile of advance and another of retreat were nothing to the celerity of such an enemy.—This plan, it is said, was the work of Dean Tucker; and possibly might contain many other particulars. The plans of Dr. Franklin and Governor Pownall appear much more feasible. B. V.

NEW SETTLEMENTS.

That they make new settlements on such purchases, by granting lands in the king's name, reserving a quit-rent to the crown for the use of the general treasury.

It is supposed better that there should be one purchaser than many; and that the crown should be that purchaser, or the union in the name of the crown. By this means the bargains may be more easily made, the price not enhanced by numerous bidders, future disputes about private Indian purchases, and monopolies of vast tracts to particular persons (which are prejudicial to the settlement and peopling of the country) prevented; and the land being again granted in small tracts to the settlers, the quit-rents reserved may in time become a fund for support of government, for defence of the country, ease of taxes, &c.

Strong forts on the lakes, the Ohio, &c. may, at the same time they secure our present frontiers, serve to defend new colonies settled under their protection; and such colonies would also mutually defend and support such forts, and better secure the friendship of the far Indians.

A particular colony has scarce strength enough to extend itself by new settlements, at so great a distance from the old; but the joint force of the union might suddenly establish a new colony or two in those parts, or extend an old colony to particular passes, greatly to the security of our present frontiers, increase of trade and people, breaking off the French communication between Canada and Louisiana, and speedy settlement of the intermediate lands.

The power of settling new colonies is therefore thought a valuable part of the plan, and what cannot so well be executed by two unions as by one.

LAWS TO GOVERN THEM.

That they make laws for regulating and governing such new settlements, till the crown shall think fit to form them into particular governments.

The making of laws suitable for the new colonies, it was thought, would be properly vested in the president and grand council; under whose protection they will at first necessarily be, and who would be well acquainted with their circumstances, as having settled them. When they are become sufficiently populous, they may by the crown be formed into complete and distinct governments.

The appointment of a sub-president by the crown, to take place in case of the death or absence of the president general, would perhaps be an improvement of the plan; and if all the governors of particular provinces were to be formed into a standing council of state, for the advice and assistance of the president general, it might be another considerable improvement.

RAISE SOLDIERS AND EQUIP VESSELS, &c.

That they raise and pay soldiers, and build forts for the defence of any of the colonies, and equip vessels of force to guard the coasts, and to protect the trade on the ocean, lakes,[1] *or great rivers; but they shall not impress men in any colony, without the consent of the legislature.*

It was thought, that quotas of men, to be raised and paid by the several colonies, and joined for any public service, could not always be got together with the necessary expedition. For instance, suppose one thousand men should be wanted in New Hampshire on any emergency; to fetch them by fifties and hundreds out of every colony, as far as South Carolina, would be inconvenient, the transportation chargeable, and the occasion perhaps passed before they could be assembled; and therefore, that it would be best to raise them (by offering bounty-money and pay) near the place where they would be wanted, to be discharged again when the service should be over.

Particular colonies are at present backward to build forts at their own expense, which they say will be equally useful to their neighboring colonies; who refuse to join, on a presumption that such forts *will* be built and kept up, though they contribute nothing. This unjust conduct weakens the whole; but the forts being for the good of the whole, it was thought best they should be built and maintained by the whole, out of the common treasury.

In the time of war, small vessels of force are sometimes necessary in the colonies to scour the coast of small privateers. These being provided by the union, will be an advantage in turn to the colonies which are situated on the sea, and whose frontiers on the land-side being covered by other colonies, reap but little immediate benefit from the advanced forts.

POWER TO MAKE LAWS, LAY DUTIES, &c.

That for these purposes they have power to make laws, and lay, and levy such general duties, imposts, or taxes, as to them shall appear most equal and just (con-

[1] "According to a plan which had been proposed by Governor Pownall, and approved of by Congress." Administration of the Colonies, Vol. II. p. 148. B.V.

sidering the ability and other circumstances of the inhabitants in the several colonies), and such as may be collected with the least inconvenience to the people; rather discouraging luxury, than loading industry with unnecessary burthens.

The laws which the president general and grand council are empowered to make, *are such only* as shall be necessary for the government of the settlements; the raising, regulating, and paying soldiers for the general service; the regulating of Indian trade; and laying and collecting the general duties and taxes. (They should also have a power to restrain the exportation of provisions to the enemy from any of the colonies, on particular occasions, in time of war.) But it is not intended that they may interfere with the constitution and government of the particular colonies; who are to be left to their own laws, and to lay, levy, and apply their own taxes as before.

GENERAL TREASURER AND PARTICULAR TREASURER.

That they may appoint a general treasurer and particular treasurer in each government when necessary: and, from time to time, may order the sums in the treasuries of each government into the general treasury; or draw on them for special payments, as they find most convenient.

The treasurers here meant are only for the general funds, and not for the particular funds of each colony, which remain in the hands of their own treasurers at their own disposal.

MONEY HOW TO ISSUE.

Yet no money to issue but by joint orders of the president general and grand council; except where sums have been appropriated to particular purposes, and the president general is previously empowered by act to draw for such sums.

To prevent misapplication of the money, or even application that might be dissatisfactory to the crown or the people, it was thought necessary to join the president general and grand council in all issues of money.

ACCOUNTS.

That the general accounts shall be yearly settled and reported to the several assemblies.

By communicating the accounts yearly to each assembly, they will be satisfied of the prudent and honest conduct of their representatives in the grand council.

QUORUM.

That a quorum of the grand council, empowered to act with the president general, do consist of twenty-five members; among whom there shall be one or more from a majority of the colonies.

The quorum seems large; but it was thought it would not be satisfactory to the colonies in general, to have matters of importance to the whole transacted by a smaller number, or even by this number of twenty-five, unless there were among them one at least from a majority of the colonies; because otherwise, the whole quorum being made up of members from three or four colonies at one end of the union, something might be done that would not be equal with respect to the rest, and thence dissatisfactions and discords might arise to the prejudice of the whole.

LAWS TO BE TRANSMITTED.

That the laws made by them for the purposes aforesaid, shall not be repugnant, but, as near as may be, agreeable to the laws of England, and shall be transmitted to the king in council for approbation, as soon as may be after their passing; and, if not disapproved within three years after presentation, to remain in force.

This was thought necessary for the satisfaction of the crown, to preserve the connexion of the parts of the British empire with the whole, of the members with the head, and to induce greater care and circumspection in making of the laws, that they be good in themselves and for the general benefit.

DEATH OF THE PRESIDENT GENERAL.

That in case of the death of the president general, the speaker of the grand council for the time being shall succeed, and be vested with the same powers and authorities, to continue till the king's pleasure be known.

It might be better, perhaps, as was said before, if the crown appointed a vice-president, to take place on the death or absence of the president general; for so we should be more sure of a suitable person at the head of the colonies. On the death or absence of both, the speaker to take place (or rather the eldest king's-governor) till his majesty's pleasure be known.

OFFICERS HOW APPOINTED.

That all military commission officers, whether for land or sea-service, to act under this general constitution, shall be nominated by the president general; but the

approbation of the grand council is to be obtained, before they receive their commissions. And all civil officers are to be nominated by the grand council, and to receive the president general's approbation before they officiate.

It was thought it might be very prejudicial to the service, to have officers appointed unknown to the people, or unacceptable; the generality of Americans serving willingly under officers they know, and not caring to engage in the service under strangers, or such as are often appointed by governors through favor or interest. The service here meant, is not the stated settled service in standing troops, but any sudden and short service, either for defence of our own colonies, or invading the enemy's country; (such as the expedition to Cape Breton in the last war, in which many substantial farmers and tradesmen engaged as common soldiers, under officers of their own country, for whom they had an esteem and affection, who would not have engaged in a standing army, or under officers from England). It was therefore thought best to give the council the power of approving the officers, which the people will look upon as a great security of their being good men. And without some such provision as this, it was thought the expense of engaging men in the service on any emergency would be much greater, and the number who could be induced to engage much less; and that therefore it would be most for the king's service and general benefit of the nation, that the prerogative should relax a little in this particular throughout all the colonies in America, as it had already done much more in the charters of some particular colonies, viz. Connecticut and Rhode Island.

The civil officers will be chiefly treasurers and collectors of taxes; and the suitable persons are most likely to be known by the council.

VACANCIES HOW SUPPLIED.

But in case of vacancy by death, or removal of any officer civil or military under this constitution, the governor of the province in which such vacancy happens may appoint, till the pleasure of the president general and grand council can be known.

The vacancies were thought best supplied by the governors in each province, till a new appointment can be regularly made; otherwise the service might suffer before the meeting of the president general and grand council.

EACH COLONY MAY DEFEND ITSELF ON EMERGENCY, &c.

That the particular military as well as civil establishments in each colony remain in their present state, the general constitution notwithstanding; and that on sudden emergencies any colony may defend itself, and lay the accounts of expense thence arising before the president general and general council, who may allow and order payment of the same, as far as they judge such accounts just and reasonable.

Otherwise the union of the whole would weaken the parts, contrary to the design of the union. The accounts are to be judged of by the president general and grand council, and allowed if found reasonable: this was thought necessary to encourage colonies to defend themselves, as the expense would be light when borne by the whole; and also to check imprudent and lavish expense in such defences.[1]

Remarks on the foregoing Plan,

(Written by Dr. Franklin, February 9, 1789.)

On reflection it seems probable, that if the foregoing Plan had been adopted and carried into execution, the present separation of the colonies from the mother country might not so soon have happened, nor the mischiefs which on both sides have occurred, perhaps during another century. For the colonies, if so united, would have really been, as they then thought themselves, sufficient to their own defence, and being trusted with it as by the Plan, an army from Britain for that purpose would have been unnecessary. The pretences for framing the Stamp Act would then not have existed, nor the other projects for drawing a revenue from America to Britain by acts of parliament, which were the cause of the breach, and attended with such terrible expense of blood and treasure: so that the different parts of the empire might still have remained in peace and union. But the fate of this Plan was singular. After many days' thorough discussion of all its parts in congress, it was unanimously agreed to;

[1] This plan of union, it will appear from the next page, was rejected; and another proposed to be substituted by the English minister, which had for its chief object, the taking power from the *people* in the colonies in order to give it to the *crown*. B. V.

and copies ordered to be sent to the assemblies of each province for concurrence, and one to the ministry in England for the approbation of the crown. The crown disapproved it, as having placed too much weight in the democratic part of the constitution; and every assembly, as having allowed too much to prerogative. So it was totally rejected. B. F.

ALBANY PAPERS CONTINUED.

I. LETTER *to Governor Shirley, concerning the Imposition of direct Taxes upon the Colonies, without their Consent.*[1]

SIR, *Tuesday Morning.*

I RETURN you the loose sheets of the Plan, with thanks to your excellency for communicating them.

I apprehend, that excluding the people of the colonies from all share in the

---

[1] These letters to Governor Shirley first appeared in the London Chronicle for Feb. 6—8, 1766, with an introduction signed *A Lover of Britain.* In the beginning of the year 1770, they were republished in Almon's Remembrancer, with an additional prefatory piece, under the signature of *A Mourner over our Calamities.*—I shall explain the subject of them in the words of one of these writers. "The Albany Plan of Union was sent to the government here for approbation: had it been approved and established by authority from hence, English America thought itself sufficiently able to cope with the French, without other assistance; several of the colonies having alone, in former wars, withstood the whole power of the enemy, unassisted not only by the mother country, but by any of the neighboring provinces.—The plan, however, was not approved here; but a *new one* was formed instead of it; by which it was proposed, that 'the governors of all the colonies, attended by one or two members of their respective councils, should assemble, and concert measures for the defence of the whole, erect forts where they judged proper, and raise what troops they thought necessary, with power to draw on the treasury here for the sums that should be wanted, and the treasury to be reimbursed by a *tax laid on the colonies by act of parliament.*"—This *new plan* being communicated by Governor Shirley to a gentleman of Philadelphia (Dr. Franklin) then in Boston (who hath very eminently distinguished himself, before and since that time, in the literary world, and whose judgment, penetration, and candor, as well as his readiness and ability to suggest, forward, or carry into execution, every scheme of public utility, hath most deservedly endeared him, not only to our fellow-subjects throughout the continent of North America, but to his numberless friends on this side the Atlantic), occasioned the following remarks from him, which perhaps may contribute in some degree to its being laid aside. As they very particularly show the then sentiments of the Americans on the subject of a parliamentary tax, before the French power in that country was subjected, and before the late restraints on their com-

choice of the grand council, will give extreme dissatisfaction; as well as the taxing them by act of parliament, where they have no representation. It is very possible, that this general government might be as well and faithfully administered without the people, as with them; but where heavy burdens are to be laid upon them, it has been found useful, to make it as much as possible their own act; for they bear better, when they have, or think they have, some share in the direction; and when any public measures are generally grievous, or even distasteful, to the people, the wheels of government move more heavily.

II. LETTER *to the same; concerning direct Taxes in the Colonies imposed without Consent, indirect Taxes, and the Albany Plan of Union.*

SIR, *Wednesday Morning.*

I MENTIONED it yesterday to your excellency as my opinion, that excluding the people of the colonies from all share in the choice of the grand council, would probably give extreme dissatisfaction, as well as the taxing them by act of parliament, where they have no representation. In matters of general concern to the people, and especially where burdens are to be laid upon them; it is of use to consider, as well what they will be apt to think and say, as what they ought to think. I shall therefore, as your excellency requires it of me, briefly mention what of either kind occurs to me on this occasion.

First, they will say, and perhaps with justice, that the body of the people in the colonies are as loyal, and as firmly attached to the present constitution and reigning family, as any subjects in the king's dominions.

That there is no reason to doubt the readiness and willingness of the representatives they may choose, to grant from time to time such supplies for the defence of the country, as shall be judged necessary, so far as their abilities will allow.

---

merce; they satisfy me, and I hope they will convince your readers (contrary to what has been advanced by some of your correspondents) that those particulars have had no share in producing the present opposition to such a tax, nor in disturbances occasioned by it, which these papers indeed do almost prophetically foretell. For this purpose, having accidentally fallen into my hands, they are communicated to you by one who is, *partially*, but in *the most enlarged sense*,

"A LOVER OF BRITAIN." B. V.

That the people in the colonies, who are to feel the immediate mischiefs of invasion and conquest by an enemy, in the loss of their estates, lives, and liberties, are likely to be better judges of the quantity of forces necessary to be raised and maintained, forts to be built and supported, and of their own abilities to bear the expense, than the parliament of England, at so great a distance.

That governors often come to the colonies merely to make fortunes, with which they intend to return to Britain; are not always men of the best abilities or integrity; have many of them no estates here, nor any natural connexions with us, that should make them heartily concerned for our welfare; and might possibly be fond of raising and keeping up more forces than necessary, from the profits accruing to themselves, and to make provision for their friends and dependants.

That the counsellors in most of the colonies, being appointed by the crown, on the recommendation of governors, are often persons of small estates, frequently dependent on the governors for offices, and therefore too much under influence.

That there is therefore great reason to be jealous of a power, in such governors and councils, to raise such sums as they shall judge necessary, by drafts on the lords of the treasury, to be afterwards laid on the colonies by act of parliament, and paid by the people here; since they might abuse it, by projecting useless expeditions, harassing the people, and taking them from their labor to execute such projects, merely to create offices and employments, and gratify their dependants, and divide profits.

That the parliament of England is at a great distance, subject to be misinformed and misled by such governors and councils, whose united interests might probably secure them against the effect of any complaint from hence.

That it is supposed an undoubted right of Englishmen, not to be taxed but by their own consent, given through their representatives.

That the colonies have no representatives in parliament.

That to propose taxing them by parliament, and refuse them the liberty of choosing a representative council, to meet in the colonies, and consider and judge of the necessity of any general tax, and the *quantum*, shows a suspicion of their loyalty to the crown, or of their regard for their country, or of their common sense and understanding; which they have not deserved.

That compelling the colonies to pay money without their consent, would be rather like raising contributions in an enemy's country, than taxing of Englishmen for their own public benefit.

That it would be treating them as a conquered people, and not as true British subjects.

That a tax laid by the representatives of the colonies might be easily lessened as the occasions should lessen; but, being once laid by parliament under the influence of the representations made by governors, would probably be kept up, and continued for the benefit of governors: to the grievous burthen and discontentment of the colonies, and prevention of their growth and increase.

That a power of governors, to march the inhabitants from one end of the British and French colonies to the other, being a country of at least one thousand five hundred miles long, without the approbation or the consent of their representatives first obtained to such expeditions, might be grievous and ruinous to the people, and would put them upon a footing with the subjects of France in Canada, that now groan under such oppression from their governor, who for two years past has harassed them with long and destructive marches to Ohio.

That if the colonies in a body may be well governed by governors and councils appointed by the crown, without representatives; particular colonies may as well, or better be so governed; a tax may be laid upon them all by act of parliament for support of government; and their assemblies may be dismissed as an useless part of the constitution.

That the powers proposed by the Albany plan of union, to be vested in a grand council representative of the people, even with regard to military matters, are not so great, as those which the colonies of Rhode Island and Connecticut are entrusted with by their charters, and have never abused; for by this plan, the president general is appointed by the crown, and controls all by his negative; but in those governments, the people choose the governor, and yet allow him no negative.

That the British colonies bordering on the French are properly frontiers of the British empire; and the frontiers of an empire are properly defended at the joint expense of the body of the people in such empire;—it would now be thought hard by act of parliament to oblige the Cinque-ports or sea-coasts of

Britain, to maintain the whole navy, because they are more immediately defended by it, not allowing them at the same time a vote in choosing members of the parliament; and, as the frontiers of America bear the expense of their own defence, it seems hard to allow them no share in voting the money, judging of the necessity and sum, or advising the measures.

That besides the taxes necessary for the defence of the frontiers, the colonies pay yearly great sums to the mother country unnoticed:—for, 1. Taxes paid in Britain by the landholder or artificer must enter into and increase the price of the produce of land and manufactures made of it; and great part of this is paid by consumers in the colonies, who thereby pay a considerable part of the British taxes.

2. We are restrained in our trade with foreign nations; and where we could be supplied with any manufacture cheaper from them, but must buy the same dearer from Britain, the difference of price is a clear tax to Britain.

3. We are obliged to carry a great part of our produce directly to Britain; and where the duties laid upon it lessen its price to the planter, or it sells for less than it would in foreign markets, the difference is a tax paid to Britain.

4. Some manufactures we could make, but are forbidden, and must take them of British merchants; the whole price is a tax to Britain.

5. By our greatly increasing the demand and consumption of British manufactures, their price is considerably raised of late years; the advantage is clear profit to Britain, and enables its people better to pay great taxes; and much of it being paid by us, is clear tax to Britain.

6. In short, as we are now suffered to regulate our trade, and restrain the importation and consumption of British superfluities (as Britain can the consumption of foreign superfluities), our whole wealth centers finally amongst the merchants and inhabitants of Britain; and if we make them richer, and enable them better to pay their taxes, it is nearly the same as being taxed ourselves, and equally beneficial to the crown.

These kind of secondary taxes, however, we do not complain of, though we have no share of the laying or disposing of them; but to pay immediate heavy taxes, in the laying, appropriation, and disposition of which we have no part, and which perhaps we may know to be as unnecessary as grievous, must seem hard measure to Englishmen, who cannot conceive, that by hazarding their lives and fortunes in subduing and settling new countries, extending the domi-

nion, and increasing the commerce of the mother-nation, they have forfeited the native rights of Britons; which they think ought rather to be given to them, as due to such merit, if they had been before in a state of slavery. — — —

These, and such kinds of things as these, I apprehend, will be thought and said by the people, if the proposed alteration of the Albany plan should take place. Then the administration of the board of governors and council so appointed, not having the representative body of the people to approve and unite in its measures, and conciliate the minds of the people to them, will probably become suspected and odious; dangerous animosities and feuds will arise between the governors and governed: and every thing go into confusion.

Perhaps I am too apprehensive in this matter; but having freely given my opinion and reasons, your excellency can judge better than I, whether there be any weight in them, and the shortness of the time allowed me will I hope in some degree excuse the imperfections of this scrawl.

With the greatest respect and fidelity, I have the honor to be your excellency's most obedient, and most humble servant,

B. FRANKLIN.

III. LETTER *to the same, on the subject of uniting the Colonies more intimately with Great Britain, by allowing them Representatives in Parliament.*

SIR, *Boston, Dec.* 22, 1754.

Since the conversation your excellency was pleased to honor me with, on the subject of *uniting the colonies* more intimately with Great Britain, by allowing them *representatives in parliament*, I have something further considered that matter, and am of opinion, that such an union would be very acceptable to the colonies, provided they had a reasonable number of representatives allowed them; and that all the old acts of parliament restraining the trade or cramping the manufactures of the colonies be at the same time repealed, and the British subjects *on this side the water* put, in those respects, on the same footing with those in Great Britain, till the new parliament, representing the whole, shall think it for the interest of the whole to re-enact some or all of them: it is not that I imagine so many representatives will be allowed the colonies, as to have any great weight by their numbers; but I think there might be sufficient to occasion those laws to be better and more impartially considered, and perhaps to overcome the interest of a petty corporation, or of any particular set of artificers

or traders in England, who heretofore seem, in some instances, to have been more regarded than all the colonies, or than was consistent with the general interest, or best natural good. I think too, that the government of the colonies by a parliament, in which they are fairly represented, would be vastly more agreeable to the people, than the method lately attempted to be introduced by royal instruction; as well as more agreeable to the nature of an English constitution, and to English liberty; and that such laws, as now seem to bear hard on the colonies, would (when judged by such a parliament for the best interest of the whole) be more cheerfully submitted to, and more easily executed.

I should hope too, that by such an union, the people of Great Britain, and the people of the colonies, would learn to consider themselves, as not belonging to different communities with different interests, but to one community with one interest; which I imagine would contribute to strengthen the whole, and greatly lessen the danger of future separations.

It is, I suppose, agreed to be the general interest of any state, that its people be numerous and rich; men enow to fight in its defence, and enow to pay sufficient taxes to defray the charge; for these circumstances tend to the security of the state, and its protection from foreign power. But it seems not of so much importance, whether the fighting be done by John or Thomas, or the tax paid by William or Charles. The iron manufacture employs and enriches British subjects, but is it of any importance to the state, whether the manufacturer lives at Birmingham or Sheffield, or both; since they are still within its bounds, and their wealth and persons still at its command? Could the Goodwin Sands be laid dry by banks, and land equal to a large country thereby gained to England, and presently filled with English inhabitants, would it be right to deprive such inhabitants of the common privileges enjoyed by other Englishmen, the right of vending their produce in the same ports, or of making their own shoes; because a merchant or a shoemaker, living on the old land, might fancy it more for his advantage to trade or make shoes for them? Would this be right, even if the land were gained at the expense of the state? And would it not seem less right, if the charge and labor of gaining the additional territory to Britain had been borne by the settlers themselves? and would not the hardship appear yet greater, if the people of the new country should be allowed no representatives in the parliament enacting such impositions? Now I look on the colonies as so many countries gained to Great Britain, and more advantageous to it, than if they had been gained out of the seas around its coasts, and joined to its land; for

being in different climates, they afford greater variety of produce, and materials for more manufactures; and being separated by the ocean, they increase much more its shipping and seamen: and since they are all included in the British empire, which has only extended itself by their means; and the strength and wealth of the parts is the strength and wealth of the whole; what imports it to the general state, whether a merchant, a smith, or a hatter, grow rich in Old or New England? and if, through increase of people, two smiths are wanted for one employed before, why may not the *new* smith be allowed to live and thrive in the *new* country, as well as the *old* one in the *old?* In fine, why should the countenance of a state be *partially* afforded to its people, unless it be most in favor of those who have most merit? And if there be any difference, those who have most contributed to enlarge Britain's empire and commerce, increase her strength, her wealth, and the numbers of her people, at the risk of their own lives and private fortunes in new and strange countries, methinks ought rather to expect some preference. With the greatest respect and esteem, I have the honor to be your excellency's most obedient and humble servant,

B. FRANKLIN.

Plan for settling Two Western Colonies in North America, with Reasons for the Plan, 1754.[1]

The great country back of the Apalachian mountains, on both sides the Ohio, and between that river and the lakes, is now well known, both to the

---

[1] For the occasion which produced this plan, see what follows. I apprehend it was given to Governor Pownall, 1754, for the purpose of being inserted in his memorial; but this point of anecdote I cannot sufficiently ascertain.

"Extract of a Memorial drawn up by order of, and presented to, his Royal Highness the Duke of Cumberland, 1756, by T. Pownall.

"In other parts of our frontier, that are not the immediate residence and country of Indians, some other species of barrier should be thought of, for which nothing can be more effectual than a barrier colony; but even this cannot be carried . . . . . into execution and effect, without the previous measure of *entrepôts* in the country between us and the enemy . . . . . All mankind must know, that no body of men, whether as an army, or an emigration of colonists, can march from one country to another, through an inhospitable wilderness, without magazines; nor with any safety, without posts communicating among each other by practicable roads, to which to retire in case of accidents, repulse, or delay.

"It is a fact, which experience evinces the truth of, that we have always been able to outsettle

English and French, to be one of the finest in North America, for the extreme richness and fertility of the land, the healthy temperature of the air, and mildness of the climate; the plenty of hunting, fishing, and fowling; the facility of trade with the Indians; and the vast convenience of inland navigation or water-carriage by the lakes and great rivers, many hundreds of leagues around.

From these natural advantages it must undoubtedly (perhaps in less than another century) become a populous and powerful dominion; and a great accession of power, either to England or France.

The French are now making open encroachments on these territories, in defiance of our known rights; and, if we longer delay to settle that country,

---

the French; and have driven the Indians out of the country more by settling than fighting; and that whenever our settlements have been wisely and completely made, the French, neither by themselves nor their dogs of war, the Indians, have been able to remove us. It is upon this fact I found the propriety of the measure of settling a barrier colony in those parts of our frontiers, *which are not the immediate residence or hunting-grounds of our* Indians. This is a measure that will be effectual; and will not only in time pay its expense, but make as great returns as any of our present colonies do; will give strength and unity to our dominions in North America; and give us possession of our country, as well as settlement in it. But above all this, the state and circumstances of our settlements render such a measure not only proper and eligible, but absolutely necessary. The English settlements, as they are at present circumstanced, are absolutely at a stand; they are settled up to the mountains: and in the mountains there is no where together land sufficient for a settlement large enough to subsist by itself, and to defend itself, and preserve a communication with the present settlements.

"If the English would advance one step further, or cover themselves where they are, it must be at once, by one large step over the mountains, with a numerous and military colony. Where such should be settled, I do not take upon me to say: at present I shall only point out the measure and the nature of it, by inserting two schemes, one of Dr. Franklin's, the other of your memorialist; and if I might indulge myself with scheming, I should imagine that two such were sufficient, and only requisite and proper: one at the back of Virginia, filling up the vacant space between the five nations and southern confederacy, and connecting into our system our barrier; the other somewhere in the Cohass or Connecticut river, or wherever best adapted to cover the New England colonies. These, with the little settlements mentioned above in the Indian countries, complete my idea of this branch." See Governor Pownall's Administration of the Colonies, vol. ii. p. 228—231, 5th edition.

The reader must carry along with him a distinction between the plans of Dr. Franklin and Governor Pownall here referred to. The first (which is before him) is particular, and proposes a plan for *two* settlements in the unlocated lands to the westward of Pennsylvania and the Virginian mountains, and is totally silent with respect to a settlement in New England; the other treats of the mode of settling new colonies in North America in general, leaving the precise situation to be in some measure pointed out by the foregoing extract. B. V.

and suffer them to possess it,—these *inconveniencies and mischiefs* will probably follow:

1. Our people, being confined to the country between the sea and the mountains, cannot much more increase in number; people increasing in proportion to their room and means of subsistence. (See the Observations on the Increase of Mankind, &c.)

2. The French will increase much more, by that acquired room and plenty of subsistence, and become a great people behind us.

3. Many of our debtors, and loose English people, our German servants and slaves, will probably desert to them, and increase their numbers and strength, to the lessening and weakening of ours.

4. They will cut us off from all commerce and alliance with the western Indians, to the great prejudice of Britain, by preventing the sale and consumption of its manufactures.

5. They will, both in time of peace and war, (as they have always done against New-England) set the Indians on to harass our frontiers, kill and scalp our people, and drive in the advanced settlers; and so, in preventing our obtaining more subsistence by cultivating of new lands, they discourage our marriages, and keep our people from increasing; thus (if the expression may be allowed) killing thousands of our children before they are born . . . . . .

If two strong colonies of English were settled between the Ohio and lake Erie, in the places hereafter to be mentioned,—these advantages might be expected:

1. They would be a great security to the frontiers of our other colonies; by preventing the incursions of the French and French Indians of Canada, on the back parts of Pennsylvania, Maryland, Virginia, and the Carolinas; and the frontiers of such new colonies would be much more easily defended, than those of the colonies last mentioned now can be, as will appear hereafter.

2. The dreaded junction of the French settlements in Canada with those of Louisiana would be prevented.

3. In case of a war, it would be easy, from those new colonies, to annoy Louisiana, by going down the Ohio and Mississippi; and the southern part of Canada, by sailing over the lakes; and thereby confine the French within narrower limits.

4. We should secure the friendship and trade of the Miamis and Twigwees (a numerous people, consisting of many tribes, inhabiting the country between the west end of lake Erie, and the south end of lake Huron, and the Ohio)

who are at present dissatisfied with the French, and fond of the English, and would gladly encourage and protect an infant English settlement in or near their country, as some of their chiefs have declared to the writer of this memoir. Further, by means of the lakes, the Ohio, and the Mississippi, our trade might be extended through a vast country, among many numerous and distant nations, greatly to the benefit of Britain.

5. The settlement of all the intermediate lands, between the present frontiers of our colonies on one side, and the lakes and Mississippi on the other, would be facilitated and speedily executed, to the great increase of Englishmen, English trade, and English power.

The grants to most of the colonies are of long narrow slips of land, extending west from the Atlantic to the South Sea. They are much too long for their breadth; the extremes at too great a distance; and therefore unfit to be continued under their present dimensions.

Several of the old colonies may conveniently be limited westward by the Allegheny or Apalachian mountains; and new colonies formed west of those mountains.

A single old colony does not seem strong enough to extend itself otherwise than inch by inch; it cannot venture a settlement far distant from the main body, being unable to support it; but if the colonies were united under one governor-general and grand council, agreeable to the Albany plan, they might easily, by their joint force, establish one or more new colonies, whenever they should judge it necessary or advantageous to the interest of the whole.

But if such union should not take place, it is proposed that two charters be granted, *each* for some considerable part of the lands west of Pennsylvania and the Virginian mountains, to a number of the nobility and gentry of Britain, with such Americans as shall join them in contributing to the settlement of those lands, either by paying a proportion of the expense of making such settlements, or by actually going thither in person, and settling themselves and families.

That by such charters it be granted, that every actual settler be entitled to a tract of acres for himself, and acres for every poll in the family he carries with him; and that every contributor of guineas be entitled to a quantity of acres, equal to the share of a single settler, for every such sum of guineas contributed and paid to the colony treasurer; a contributor for shares to have an additional share *gratis*; that settlers may likewise be contributors, and have right of land in both capacities.

That as many and as great privileges and powers of government be granted to the contributors and settlers, as his Majesty in his wisdom shall think most fit for their benefit and encouragement, consistent with the general good of the British empire; for extraordinary privileges and liberties, with lands on easy terms, are strong inducements to people to hazard their persons and fortunes in settling new countries; and such powers of government as (though suitable to the circumstances, and fit to be trusted with an infant colony, might be judged unfit when it becomes populous and powerful) these might be granted for a term only; as the choice of their own governor for ninety-nine years; the support of government in the colonies of Connecticut and Rhode Island (which *now* enjoy that and other like privileges) being much less expensive, than in the colonies under the immediate government of the crown, and the constitution more inviting.

That the first contributors to the amount of guineas be empowered to choose a treasurer to receive the contribution.

That no contributions be paid till the sum of thousand guineas be subscribed.

That the money thus raised be applied to the purchase of the lands from the Six Nations and other Indians; and of provisions, stores, arms, ammunition, carriages, &c. for the settlers; who, after having entered their names with the treasurer, or person by him appointed to receive and enter them, are, upon public notice given for that purpose, to rendezvous at a place to be appointed, and march in a body to the place destined for their settlement, under the [charge] of the government to be established over them. Such rendezvous and march however not to be directed till the number of names of settlers entered, capable of bearing arms, amount at least to thousand . . . . .

It is apprehended, that a great sum of money might be raised in America on such a scheme as this; for there are many who would be glad of any opportunity, by advancing a small sum at present, to secure land for their children, which might in a few years become very valuable; and a great number, it is thought, of actual settlers might likewise be engaged (some from each of our present colonies) sufficient to carry it into full execution by their strength and numbers; provided only, that the crown would be at the expense of removing the little forts the French have erected in their encroachments on his Majesty's territories, and supporting a strong one near the falls of Niagara, with a few small armed vessels, or half-galleys, to cruize on the lakes.

For the security of this colony in its infancy, a small fort might be erected, and for some time maintained, at Buffalo Creek, on the Ohio, above the settlement; and another at the mouth of the Tioga, on the south side of lake Erie, where a port should be formed, and a town erected for the trade of the lakes.—The colonists for *this settlement* might march by land through Pennsylvania ...

The river Sciota, which runs into the Ohio about two hundred miles below Logs Town, is supposed the fittest seat for the *other colony;* there being for forty miles on each side of it and quite up to its heads a body of all rich land; the finest spot of its bigness in all North America, and has the particular advantage of sea-coal in plenty (even above ground in two places) for fuel, when the woods shall be destroyed. This colony would have the trade of the Miamis or Twigwees; and should, at first, have a small fort near Hockkockin, at the head of the river; and another near the mouth of Wabash. Sanduski, a French fort near the lake Erie, should also be taken; and all the little French forts south and west of the lakes, quite to the Mississippi, be removed, or taken and garrisoned by the English. The colonists for this settlement might assemble near the heads of the rivers in Virginia, and march over land to the navigable branches of the Kanhawa, where they might embark with all their baggage and provisions, and fall into the Ohio, not far above the mouth of Sciota; or they might rendezvous at Will's Creek, and go down the Monongahela to Ohio.

The fort and armed vessels at the strait of Niagara would be a vast security to the frontiers of these new colonies against any attempts of the French from Canada. The fort at the mouth of the Wabash would guard that river, the Ohio, and Cutava river, in case of any attempt from the French of Mississippi. (Every fort should have a small settlement round it; as the fort would protect the settlers, and the settlers defend the fort and supply it with provisions.) . . . . .

The difficulty of settling the first English colonies in America, at so great a distance from England, must have been vastly greater, than the settling these proposed new colonies: for it would be the interest and advantage of all the present colonies to support these new ones; as they would cover their frontiers, and prevent the growth of the French power behind or near their present settlements; and the new country is nearly at equal distance from all the old colonies, and could easily be assisted from all of them.

And as there are already in all the old colonies many thousands of families that are ready to swarm, wanting more land; the richness and natural advantage of the Ohio country would draw most of them thither, were there but a tolerable prospect of a safe settlement. So that the new colonies would soon be full of people; and, from the advantage of their situation, become much more terrible to the French settlements, than those are now to us. The gaining of the back Indian trade from the French, by the navigation of the lakes, &c. would of itself greatly weaken our enemies: it being now their principal support, it seems highly probable, that in time they must be subjected to the British crown, or driven out of the country.

Such settlements may be better made now, than fifty years hence, because it is easier to settle ourselves, and thereby prevent the French settling there as they seem now to intend, than to remove them when strongly settled.

If these settlements are postponed, then more forts and stronger, and more numerous and expensive garrisons must be established to secure the country, prevent their settling, and secure our present frontiers; the charge of which may probably exceed the charge of the proposed settlements, and the advantage nothing near so great.

The fort at Oswego should likewise be strengthened, and some armed half-gallies, or other small vessels, kept there to cruise on lake Ontario, as proposed by Mr. Pownall in his paper laid before the commissioners at the Albany treaty.[1]

If a fort was also built at Tirondequat on lake Ontario, and a settlement made there near the lake side, where the lands are said to be good, (much better than at Oswego); the people of such settlements would help to defend both forts on any emergency.[2]

---

[1] See his work above quoted, Vol. II. p. 234, *et seq.* and p. 179, *et seq.*

[2] The whole proposal was neglected, though the French thought a considerable settlement very practicable, in order to get at the Ohio. See Governor Pownall, Vol. II. p. 236. B. V.

REMARKS AND FACTS RELATIVE TO THE AMERICAN PAPER-MONEY,[1] 1764.

[Referred to in MEMOIRS, Part III. p. 178. 4to. Ed.]

In the REPORT of the BOARD of TRADE, dated February 9, 1764, the following Reasons are given for *restraining the emission of* paper-bills of credit in America, as *a legal tender.*

1. "That it *carries the gold and silver out* of the province, and so ruins the country; as *experience has shown,* in every colony where it has been practised in any great degree.

2. "That the *merchants* trading to America *have suffered* and lost by it.

3. "That the restriction [of it] *has had a beneficial effect* in New England.

4. "That every *medium of trade should have an intrinsic value,* which paper-money has not. Gold and silver are therefore the fittest for this medium, as they are an equivalent; which paper never can be.

5. "That *debtors* in the assemblies make paper-money with *fraudulent views.*

6. "That in the middle colonies, where the credit of the paper-money has been best supported, the bills have *never kept to their nominal value* in circulation; but have constantly depreciated to a certain degree, whenever the quantity has been increased."

To consider these Reasons in their order; the first is,

1. "*That paper-money* carries the gold and silver out *of the province, and so ruins the country; as* experience has shown, *in every colony where it has been practised in any great degree.*" This opinion, of its ruining the country, seems to be merely speculative, or not otherwise founded than upon misinformation in the matter of fact. The truth is, that the balance of their trade with Britain being greatly against them, the gold and silver is drawn out to pay that balance; and then the necessity of some medium of trade has induced the making of

[1] During the war, there had been a considerable and unusual trade to America, in consequence of the great fleets and armies on foot there, and the clandestine dealings with the enemy, who were cut off from their own supplies. This made great debts. The briskness of the trade ceasing with the war, the merchants were anxious for payment; which occasioned some confusion in the colonies, and stirred up a clamor (in England) against *paper-money.* The board of trade, of which Lord Hilsborough was the chief, joined in this opposition to paper-money, as appears by the report. Dr. Franklin being asked to draw up an answer to their report, wrote the above. B. V.

paper-money, which could *not* be carried away. Thus, if carrying out all the gold and silver ruins a country, every colony was ruined before it made paper-money. But, far from being ruined by it, the colonies that have made use of paper-money, have been, and are, all in thriving condition. The debt indeed to Britain has increased, because their numbers, and of course their trade, have increased; for all trade having always a proportion of debt outstanding, which is paid in its turn, while fresh debt is contracted, the proportion of debt naturally increases as the trade increases; but the improvement and increase of estates in the colonies has been in a greater proportion than their debt. *New England*, particularly, in 1696, (about the time they began the use of paper-money,) had in all its four provinces but 130 churches or congregations; in 1760 they were 530. The number of farms and buildings there is increased in proportion to the numbers of people; and the goods exported to them from England in 1750, before the restraint took place, were near five-times as much as before they had paper-money. *Pennsylvania*, before it made any paper-money, was totally stript of its gold and silver; though they had from time to time, like the neighboring colonies, agreed to take gold and silver coins at higher and higher nominal values, in hopes of drawing money into, and retaining it, for the internal uses of the province. During that weak practice, silver got up by degrees to 8s. 9d. per ounce; and English crowns were called six, seven, and eight shilling pieces, long before paper-money was made. But this practice of increasing the denomination, was found not to answer the end. The balance of trade carried out the gold and silver as fast as it was brought in; the merchants raising the price of their goods in proportion to the increased denomination of the money. The difficulties for the want of cash were accordingly very great, the chief part of the trade being carried on by the extremely inconvenient method of barter; when in 1723 paper-money was first made there; which gave new life to business, promoted greatly the settlement of new lands, (by lending small sums to beginners on easy interest, to be repaid by instalments,) whereby the province has so greatly increased in inhabitants, that the export from hence thither is now more than tenfold what it then was; and by their trade with foreign colonies, they have been able to obtain great quantities of gold and silver to remit hither in return for the manufactures of this country. *New York* and *New Jersey* have also increased greatly during the same period, with the use of paper-money; so that it does not appear to be of the ruinous nature ascribed to it. And if the inhabitants of those countries,

are glad to have the use of paper among themselves, that they may thereby be enabled to spare for remittances hither, the gold and silver they obtain by their commerce with foreigners; one would expect that no objection against their parting with it could arise here, in the country that receives it.

The 2d reason is, "*That the* merchants *trading to America have* suffered *and lost by the paper-money.*"—This may have been the case in particular instances, at particular times and places; as in *South Carolina* about fifty-eight years since, when the colony was thought in danger of being destroyed by the Indians and Spaniards, and the British merchants, in fear of losing their whole effects there, called precipitately for remittances; and the inhabitants, to get something lodged in safe countries, gave any price in paper-money for bills of exchange, whereby the paper, as compared with bills, or with produce, or other effects fit for exportation, was suddenly and greatly depreciated. The unsettled state of government for a long time in that province, had also its share in depreciating its bills. But since that danger blew over, and the colony has been in the hands of the crown, their currency became fixed, and has so remained to this day. Also in *New England*, when much greater quantities were issued than were necessary for a medium of trade, to defray the expedition against Louisbourg; and, during the last war in *Virginia* and *North Carolina*, when great sums were issued to pay the colony troops, and the war made tobacco a poorer remittance, from the higher price of freight and insurance; in these cases, the merchants trading to those colonies may sometimes have suffered by the sudden and unforeseen rise of exchange. By slow and gradual rises they seldom suffer, the goods being sold at proportionable prices. But war is a common calamity in all countries, and the merchants that deal with them cannot expect to avoid a share of the losses it sometimes occasions, by affecting public credit. It is hoped, however, that the profits of their subsequent commerce with those colonies may have made them some reparation. And the merchants trading to the *Middle Colonies* (New York, New Jersey, and Pennsylvania,) have never suffered by any rise of exchange, it having ever been a constant rule there to consider British debts as payable in Britain, and not to be discharged but by as much paper (whatever might be the rate of exchange) as would purchase a bill for the full sterling sum. On the contrary, the merchants have been great gainers by the use of paper-money in those colonies; as it enabled them to send much greater quantities of goods, and the purchasers to pay more punctually for them. And the people

there make no complaint of any injury done them by paper-money, with a legal tender: they are sensible of its benefits, and petition to have it so allowed.

The 3d reason is, "*That the* restriction *has had a* beneficial effect *in New England.*"—Particular circumstances in the *New England* colonies, made paper-money less necessary and less convenient to them. They have great and valuable fisheries of whale and cod, by which large remittances can be made. They are four distinct governments; but having much mutual intercourse of dealings, the money of each used to pass current in all; but the whole of this common currency not being under one common direction, was not so easily kept within due bounds; the prudent reserve of one colony in its emissions being rendered useless by excess in another. The Massachusets, therefore, were not dissatisfied with the restraint, as it restrained their neighbors as well as themselves; and perhaps *they* do not desire to have the act repealed. They have not yet felt much inconvenience from it, as they were enabled to abolish their paper-currency by a large sum in silver from Britain, to reimburse their expenses in taking Louisbourg, which, with the gold brought from Portugal, by means of their fish, kept them supplied with a currency, till the late war furnished them and all America with bills of exchange, so that little cash was needed for remittance. Their fisheries too furnish them with remittance through Spain and Portugal to England, which enables them the more easily to retain gold and silver in their country. The *middle Colonies* have not this advantage; nor have they tobacco, which in *Virginia* and *Maryland* answers the same purpose. When colonies are so different in their circumstances, a regulation that is not inconvenient to one or a few, may be very much so to the rest. But the pay is now become so indifferent in New England, at least in some of its provinces, through the want of currency, that the trade thither is at present under great discouragement.

The 4th reason is, "That every *medium of trade* should have an *intrinsic value*, which paper-money has not. Gold and silver are therefore the fittest for this medium, as they are an equivalent, which paper can never be."—However fit a particular thing may be for a particular purpose, wherever that thing is not to be had, or not to be had in sufficient quantity, it becomes necessary to use something else, the fittest that can be got, in lieu of it. Gold and silver are not the produce of North America, which has no mines; and that which is brought thither cannot be kept there in sufficient quantity for a currency.

Britain, an independent great state, when its inhabitants grow too fond of the expensive luxuries of foreign countries, that draw away its money, can, and frequently does, make laws to discourage or prohibit such importations, and by that means can retain its cash. The *colonies* are dependent governments, and their people having naturally great respect for the sovereign country, and being thence immoderately fond of its modes, manufactures, and superfluities, cannot be restrained from purchasing them by any province law; because such law, if made, would immediately be repealed here, as prejudicial to the trade and interest of Britain. It seems hard, therefore, to draw all their real money from them, and then refuse them the poor privilege of using paper instead of it. Bank bills and bankers' notes are daily used *here* as a medium of trade; and in large dealings, perhaps the greater part is transacted by their means; and yet *they* have no intrinsic value, but rest on the credit of those that issue them, as paper-bills in the colonies do on the credit of the respective governments there. Their being payable in cash upon sight by the drawer, is indeed a circumstance that cannot attend the colony bills, for the reasons just above mentioned, their cash being drawn from them by the British trade; but the legal tender being substituted in its place, is rather a greater advantage to the possessor, since he need not be at the trouble of going to a *particular bank* or banker to demand the money, finding (wherever he has occasion to lay out money in the province) a person that is obliged to take the bills. So that even out of the province, the knowledge that every man within that province is obliged to take its money, gives the bill a credit among its neighbors nearly equal to what they have at home. And were it not for the laws *here*, that restrain or prohibit as much as possible all losing trades, the cash of *this* country would soon be exported; every merchant who had occasion to remit it, would run to the bank with all its bills that came into his hands, and take out his part of its treasure for that purpose; so that in a short time it would be no more able to pay bills in money upon sight, than it is now in the power of a colony treasury so to do. And if government afterwards should have occasion for the credit of the bank, it must of necessity make its bills a legal tender; funding them however on taxes, by which they may in time be paid off, as has been the general practice in the colonies. At this very time, even the silver-money in England is obliged to the legal tender for part of its value; that part which is the difference between its real weight and its denomination. Great part of the shillings and sixpences now current are, by wearing, become

5, 10, 20, and some of the sixpences even 50 per cent. too light. For this difference between the *real* and the *nominal*, you have no *intrinsic* value: you have not so much as paper; you have nothing. It is the legal tender, with the knowledge that it can easily be repassed for the same value, that makes three-pennyworth of silver pass for sixpence. Gold and silver have undoubtedly *some* properties that give them a fitness above paper as a medium of exchange, particularly their *universal estimation;* especially in cases where a country has occasion to carry its money abroad, either as a stock to trade with, or to purchase *allies* and *foreign succours*. Otherwise that very universal estimation is an inconvenience which paper-money is free from, since it tends to deprive a country of even the quantity of currency that should be retained as a necessary instrument of its internal commerce, and obliges it to be continually on its guard in making, and executing at a great expense, the laws that are to prevent the trade which exports it. Paper-money well funded has another great advantage over gold and silver, its lightness of carriage, and the little room that is occupied by a great sum; whereby it is capable of being more easily, and more safely, because more privately, conveyed from place to place. Gold and silver are not *intrinsically* of equal value with iron, a metal in itself capable of many more beneficial uses to mankind. Their value rests chiefly in the estimation they happen to be in among the generality of nations, and the credit given to the opinion that that estimation will continue: otherwise a pound of gold would not be a real equivalent for even a bushel of wheat. Any other well-founded credit is as much an equivalent as gold and silver, and in some cases more so, or it would not be preferred by commercial people in different countries. Not to mention again our own bank bills, Holland, which understands the value of cash as well as any people in the world, would never part with gold and silver for credit (as they do when they put it into their bank, from whence little of it is ever afterwards drawn out[1]) if they did not think and find the credit a full equivalent.

The 5th reason is, "*That* debtors *in the assemblies make paper-money* with fraudulent views." This is often said by the adversaries of paper-money, and if it has been the case in any particular colony, that colony should, on the proof of the fact, be duly punished. This, however, would be no reason for punish-

[1] Perhaps Dr. Franklin had not at this time read what Sir James Stewart says of the Amsterdam bank re-issuing its money. B. V.

ing other colonies, who have *not* so abused their legislative powers. To deprive all the colonies of the convenience of paper-money, because it has been charged on some of them, that they have made it an instrument of fraud, is as if all the India, Bank, and other stocks and trading companies were to be abolished, because there has been once in an age Mississippi and South Sea schemes and bubbles.

The 6th and last reason is, "*That in the middle colonies, where the paper-money has been best supported, the bills have* never kept to their nominal value *in circulation, but have constantly depreciated to a certain degree, whenever the quantity has been increased.*"—If the rising of the value of any particular commodity wanted for exportation, is to be considered as a depreciation of the values of *whatever remains* in the country, then the rising of silver above paper to that height of additional value, which its capability of exportation only gave it, may be called a depreciation of the paper. Even here, as bullion has been wanted or not wanted for exportation, its price has varied from 5s. 2d. to 5s. 8d. per ounce. This is near 10 per cent. But was it ever said or thought on such an occasion, that all the bank bills, and all the coined silver, and all the gold in the kingdom, were depreciated 10 per cent.? Coined silver is now wanted here for change, and 1 per cent. is given for it by some bankers; are gold and bank notes therefore depreciated 1 per cent.?—The fact in the middle colonies is really this: on the emission of the first paper-money, a difference soon arose between that and the silver, the latter having a property the former had not, a property always in demand in the colonies; to wit, its being fit for a remittance. This property having soon found its value by the merchants bidding on one another for it, and a dollar thereby coming to be rated at 8s. in paper-money of New York, and 7s. 6d. in paper of Pennsylvania; it has continued uniformly at those rates in both provinces, now near 40 years, without any variation upon new emissions, though in Pennsylvania the paper currency has at times increased from 15,000*l.* the first sum, to 600,000*l.* or near it.—Nor has any alteration been occasioned by the paper-money, in the price of the necessaries of life, when compared with silver: they have been for the greatest part of the time no higher than before it was emitted, varying only by plenty and scarcity according to the seasons, or by a less or greater foreign demand.—It has indeed been usual with the adversaries of a paper currency, to call every rise of exchange with London, a depreciation of this paper: but this notion appears to be by no means just. For if the paper purchases every thing but bills of exchange at

the former rate, and these bills are not above one-tenth of what is employed [in] purchases, then it may be more properly and truly said, that the exchange has risen, than that the paper has depreciated. And as a proof of this, it is a certain fact, that whenever in those colonies bills of exchange have been dearer, the purchaser has been constantly obliged to give more in silver as well as in paper for them, the silver having gone hand in hand with the paper at the rate above mentioned, and therefore it might as well have been said that the silver was depreciated.

There have been several different schemes for furnishing the colonies with paper-money, that should *not* be a legal tender, viz.

1. *To form a Bank in imitation of the Bank of England, with a sufficient stock of cash* to pay the bills on sight.

This has been often proposed, but appears impracticable under the present circumstances of the colony trade, which, as is said above, draws all the cash to Britain, and would soon strip the bank.

2. *To* raise a fund *by some yearly tax, securely lodged in the Bank of* England *as it arises, which should* (during the term of years *for which the paper-bills are to be current)* accumulate *to a sum sufficient to discharge them all at their* original value.

This has been tried in Maryland, and the bills so funded were issued without being made a general legal tender. The event was, that as notes payable in time are naturally subject to a discount proportioned to the time, so these bills fell at the beginning of the term so low, as that twenty pounds of them became worth no more than twelve pounds in Pennsylvania, the next neighboring province; though both had been struck near the same time at the same nominal value, but the latter was supported by the general legal tender. The Maryland bills however began to rise as the term shortened, and towards the end recovered their full value. But as a depreciating currency injures creditors, *this* injured debtors, and by its continually changing value appears unfit for the purpose of money, which should be as fixed as possible in its own value, because it is to be the measure of the value of other things.

3. *To make the bills* carry an interest *sufficient to support their value.*

This too has been tried in some of the New England colonies, but great inconveniences were found to attend it. The bills, to fit them for a currency, are made of various denominations, and some very low for the sake of change; there are of them from 10*l.* down to 3*d.* When they first come abroad they

pass easily, and answer the purpose well enough for a few months; but as soon as the interest becomes worth computing, the calculation of it on every little bill in a sum between the dealer and his customers in shops, warehouses, and markets, takes up much time to the great hindrance of business. This evil, however, soon gave place to a worse; for the bills were in a short time gathered up and hoarded, it being a very tempting advantage to have money bearing interest, and the principal all the while in a man's power ready for bargains that may offer, which money out on mortgage is not. By this means numbers of people became usurers with small sums, who could not have found persons to take such sums of them upon interest, giving good security, and would therefore not have thought of it, but would rather have employed the money in some business if it had been money of the common kind. Thus trade, instead of being increased by such bills, is diminished; and by their being shut up in chests, the very end of making them, (viz. to furnish a medium of commerce) is in a great measure, if not totally, defeated.

On the whole, no method has hitherto been formed to establish a medium of trade in lieu of money, equal in all its advantages to bills of credit—funded on sufficient taxes for discharging it, or on land-security of double the value for repaying it at the end of the term, and, in the mean time, made a GENERAL LEGAL TENDER. The experience of now near half a century in the middle colonies, has convinced them of it among themselves, by the great increase of their settlements, numbers, buildings, improvements, agriculture, shipping, and commerce. And the same experience has satisfied the British merchants who trade thither, that it has been greatly useful to them, and not in a single instance prejudicial.

It is therefore hoped, that securing the full discharge of British debts which are payable here, and in all justice and reason ought to be fully discharged here in sterling money, the restraint on the legal tender within the colonies will be taken off, at least for those colonies that desire it, and where the merchants trading to them make no objection to it.

CAUSES OF THE AMERICAN DISCONTENTS BEFORE 1768.

[*Referred to in Memoirs of the Life, Part* ii. *p.* 179. 4*to. Ed.*]

The waves never rise but when the winds blow. *Prov.*

SIR,[1]

As the cause of the present ill-humor in America, and of the resolutions taken there to purchase less of our manufactures, does not seem to be generally understood; it may afford some satisfaction to your readers, if you give them the following short historical state of facts.

From the time that the colonies were first considered as capable of *granting aids to the crown*, down to the end of the last war, it is said, that the constant mode of obtaining those aids was, by requisition made from the crown, through its governors, to the several assemblies, in circular letters from the secretary of state, in his majesty's name; setting forth the occasion, requiring them to take the matter into consideration, and expressing a reliance on their prudence, duty, and affection to his majesty's government, that they would grant such sums, or raise such numbers of men, as were suitable to their respective circumstances.

The colonies being accustomed to this method, have from time to time granted money to the crown, or raised troops for its service, in proportion to their abilities; and during all the last war beyond their abilities; so that considerable sums were returned them yearly by parliament, as they had exceeded their proportion.

Had this happy method of requisition been continued, (a method that left the King's subjects in those remote countries the pleasure of showing their zeal and loyalty, and of imagining that they recommended themselves to their sovereign by the liberality of their voluntary grants) there is no doubt, but all the money that could reasonably be expected to be raised from them in any manner, might have been obtained, without the least heart-burning, offence, or breach of the harmony of affections and interests that so long subsisted between the two countries.

It has been thought wisdom in a government exercising sovereignty over

[1] This letter first appeared in a *London* paper, *January* 7, 1768, and was afterwards reprinted as a postscript to *The true Sentiments of* America, printed for *Almon*, 1768.

different kinds of people, to have *some regard to prevailing and established opinions* among the people to be governed; wherever such opinions might, in their effects, obstruct or promote public measures. If they tend to obstruct public service, they are to be changed, if possible, before we attempt to act against them; and they can only be changed by reason and persuasion. But if public business can be carried on without thwarting those opinions; if they can be, on the contrary, made subservient to it; they are not unnecessarily to be thwarted, however absurd such popular opinions may be in their nature.

This had been the wisdom of our government with respect to raising money in the colonies. It was well known, that the colonists universally were of opinion, that no money could be levied from English subjects, but by their own consent, given by themselves or their chosen representatives; that therefore whatever money was to be raised from the people in the colonies, must first be granted by their assemblies, as the money raised in Britain is first to be granted by the house of commons; that this right of granting their own money, was essential to English liberty; and that if any man, or body of men in which they had no representative of their choosing, could tax them at pleasure, they could not be said to have any property, any thing they could call their own. But as these opinions did not hinder their granting money voluntarily and amply, whenever the crown by its servants came into their assemblies (as it does into its parliaments of *Britain* or *Ireland*) and demanded aids; therefore that method was chosen, rather than the hateful one of arbitrary taxes.

I do not undertake here to support these opinions of the Americans; they have been refuted by a late act of parliament, declaring its own power;—which very parliament, however, showed wisely so much tender regard to those inveterate prejudices, as to repeal a tax that had militated against them. And those prejudices are still so fixed and rooted in the Americans, that, it has been supposed, not a single man among them has been convinced of his error, even by that act of parliament.

The person then who first projected to lay aside the accustomed method of requisition, and to raise money on America by *stamps*, seems not to have acted wisely, in deviating from that method (which the colonists looked upon as constitutional) and thwarting unnecessarily the fixed prejudices of so great a number of the king's subjects.—It was not, however, for want of knowledge, that what he was about to do would give them offence; he appears to have been very sensible of this, and apprehensive that it might occasion some dis-

orders; to prevent or suppress which, he projected another bill that was brought in the same session with the stamp act, whereby it was to be made lawful for military officers in the colonies to quarter their soldiers in private houses. This seemed intended to awe the people into a compliance with the other act. Great opposition however being raised here against the bill by the agents from the colonies, and the merchants trading thither, (the colonists declaring, that under such a power in the army, no one could look on his house as his own, or think he had a home, when soldiers might be thrust into it and mixed with his family at the pleasure of an officer,) that part of the bill was dropt; but there still remained a clause, when it passed into a law, to oblige the several assemblies to provide quarters for the soldiers, furnishing them with firing, bedding, candles, small beer or rum, and sundry other articles, at the expense of the several provinces. And this act continued in force when the stamp act was repealed; though, if obligatory on the assemblies, it equally militated against the American principle above mentioned—that money is not to be raised on English subjects without their consent.

The colonies nevertheless, being put into high good-humor by the repeal of the stamp act, chose to avoid a fresh dispute upon the other, it being temporary and soon to expire, never, as they hoped, to revive again; and in the mean time they, by various ways in different colonies, provided for the quartering of the troops; either by acts of their own assemblies, without taking notice of the act of *parliament*, or by some variety or small diminution, as of salt and vinegar, in the supplies required by the act; that what they did might appear a voluntary act of their own, and not done in due obedience to an *act of parliament*, which, according to their ideas of their rights, they thought hard to obey.

It might have been well if the matter had then passed without notice; but a governor having written home an angry and aggravating letter upon this conduct in the assembly of his province, the outed proposer[1] of the stamp act and his adherents (then in the opposition) raised such a clamor against America, as being in rebellion; and against those who had been for the repeal of the stamp act, as having thereby been encouragers of this supposed rebellion; that it was thought necessary to enforce the quartering act by another act of parliament, taking away from the province of New York (which had been the most explicit in its refusal) all the powers of legislation, till it should have

[1] Mr. George Grenville.

complied with that act. The news of which greatly alarmed the people every where in America, as (it had been said) the language of such an act seemed to them to be—obey implicitly laws made by the parliament of *Great Britain* to raise money on you without your consent, or you shall enjoy no rights or privileges at all.

At the same time a person lately in high office[1] projected the levying more money, from America, by new duties on various articles of our own manufacture, (as glass, paper, painters' colors, &c.) appointing a new board of customs, and sending over a set of commissioners, with large salaries, to be established at Boston, who were to have the care of collecting those duties; which were by the act expressly mentioned to be intended for the payment of the salaries of governors, judges, and other officers of the crown in *America;* it being a pretty general opinion here, that those officers ought not to depend on the people there, for any part of their support.

It is not my intention to combat this opinion.—But perhaps it may be some satisfaction to your readers, to know what ideas the Americans have on the subject. They say then, as to *governors,* that they are not like princes whose posterity have an inheritance in the government of a nation, and therefore an interest in its prosperity; they are generally strangers to the provinces they are sent to govern; have no estate, natural connexion or relation there, to give them an affection for the country: that they come only to make money as fast as they can; are sometimes men of vicious characters and broken fortunes, sent by a minister merely to get them out of the way: that as they intend staying in the country no longer than their government continues, and purpose to leave no family behind them, they are apt to be regardless of the good-will of the people, and care not what is said or thought of them after they are gone. Their situation, at the same time, gives them many opportunities of being vexatious; and they are often so, notwithstanding their dependence on the assemblies for all that part of their support, that does not arise from fees established by law; but would probably be much more so, if they were to be supported by money drawn from the people without their consent or good-will; which is the professed design of this new act. That if by means of these forced duties government is to be supported in America, without the intervention of the assemblies, their assemblies will soon be looked upon as useless; and a

[1] Mr. Charles Townsend.

governor will not call them, as having nothing to hope from their meeting, and perhaps something to fear from their inquiries into, and remonstrances against, his mal-administration. That thus the people will be deprived of their most essential rights. That it being (as at present) a governor's interest to cultivate the good-will, by promoting the welfare, of the people he governs,—can be attended with no prejudice to the mother-country; since all the laws he may be prevailed on to give his assent to are subject to revision here, and if reported against by the board of trade, are immediately repealed by the crown; nor dare he pass any law contrary to his instructions; as he holds his office during the pleasure of the crown, and his securities are liable for the penalties of their bonds if he contravenes those instructions. This is what they say as to governors.

As to *judges*, they allege, that being appointed from this country, and holding their commissions not during good behaviour, as in Britain, but during pleasure; all the weight of interest or influence would be thrown into one of the scales (which ought to be held even) if the salaries are also to be paid out of duties raised upon the people without their consent, and independent of their assemblies' approbation or disapprobation of the judge's behaviour. That it is true, judges should be free from all influence; and therefore, whenever government here will grant commissions to able and honest judges during good behaviour, the assemblies will settle permanent and ample salaries on them during their commissions; but, at present, they have no other means of getting rid of an ignorant or an unjust judge (and some of scandalous characters have, they say, been sometimes sent them) left, but by starving them out.

I do not suppose these reasonings of theirs will appear here to have much weight. I do not produce them with an expectation of convincing your readers. I relate them merely in pursuance of the task I have imposed on myself, to be an impartial historian of American facts and opinions.

The colonists being thus greatly alarmed, as I said before, by the news of the act for abolishing the legislature of New York, and the imposition of these new duties, professedly for such disagreeable purposes (accompanied by a new set of revenue officers, with large appointments, which gave strong suspicions, that more business of the same kind was soon to be provided for them, that they might earn their salaries), began seriously to consider their situation; and to

revolve afresh in their minds, grievances which, from their respect and love for this country, they had long borne and seemed almost willing to forget. They reflected how lightly the interest of *all* America had been estimated here, when the interests of a *few* of the inhabitants of Great Britain happened to have the smallest competition with it. That the whole American people was forbidden the advantage of a direct importation of wine, oil, and fruit, from Portugal; but must take them loaded with all the expense of a voyage one thousand leagues round about, being to be landed first in England, to be re-shipped for America; expenses amounting, in war time at least, to thirty pounds per cent. more than otherwise they would have been charged with; and all this, merely that a few Portugal merchants in London may gain a commission on those goods passing through their hands—(Portugal merchants, by the bye, that can complain loudly of the smallest hardships laid on their trade by foreigners, and yet even in the last year could oppose with all their influence the giving ease to their fellow-subjects laboring under so heavy an oppression!) That on a slight complaint of a few Virginia merchants, nine colonies had been restrained from making paper-money, become absolutely necessary to their internal commerce, from the constant remittance of their gold and silver to Britain. But not only the interest of a particular body of *merchants*, but the interest of any small body of British *tradesmen or artificers*, has been found, they say, to outweigh that of all the king's subjects in the colonies. There cannot be a stronger natural right than that of a man's making the best profit he can of the natural produce of his lands, provided he does not thereby hurt the state in general. Iron is to be found everywhere in America, and the beaver furs are the natural produce of that country: hats, and nails, and steel, are wanted there as well as here. It is of no importance to the common welfare of the empire, whether a subject of the king's obtains his living by making hats on this, or on that side of the water. Yet the hatters of England have prevailed to obtain an act in their own favor, restraining that manufacture in America; in order to oblige the Americans to send their beaver to England to be manufactured, and purchase back the hats, loaded with the charges of a double transportation. In the same manner have a few nail-makers, and a still smaller body of steel-makers, (perhaps there are not half a dozen of these in England) prevailed totally to forbid by an act of parliament the erecting of slitting-mills, or steel furnaces, in America; that the Americans may be obliged to take all their nails for their

buildings, and steel for their tools, from these artificers, under the same disadvantages.[1]

Added to these, the Americans remembered the act authorising the most cruel insult that perhaps was ever offered by one people to another, that of *emptying our gaols* into their settlements; Scotland too having within these two years obtained the privilege it had not before, of sending its rogues and villains also to the plantations—I say, reflecting on these things, they said one

---

[1] Note at the end of the fourth paragraph of the Farmer's Seventh Letter, (written by Mr. Dickinson).

"Many remarkable instances might be produced of the extraordinary inattention with which bills of great importance, concerning these colonies, have passed in parliament; which is owing, as it is supposed, to the bills being brought in, by the persons who have points to carry, so artfully framed, that it is not easy for the members in general, in the haste of business, to discover their tendency.

"The following instances show the truth of this remark:—

"When Mr. Grenville, in the violence of reformation and innovation, formed the 4th George III. chap. 15th, for regulating the American trade, the word 'Ireland' was dropt in the clause relating to our iron and lumber, so that we could send these articles to no other part of Europe, but to Great Britain. This was so unreasonable a restriction, and so contrary to the sentiments of the legislature, for many years before, that it is surprising it should not have been taken notice of in the house. However, the bill passed into a law. But when the matter was explained, this restriction was taken off in a subsequent act.

"I cannot say how long after the taking off this restriction, as I have not the acts; but I think in less than eighteen months, another act of parliament passed, in which the word 'Ireland' was left out, as it had been before. The matter being a second time explained, was a second time regulated.

"Now if it be considered, that the omission mentioned, struck off, with one word, so very great a part of our trade, it must appear remarkable: and equally so is the method by which rice became an enumerated commodity, and therefore could be carried to Great Britain only.

"'The enumeration was obtained,' (says Mr. Gee on Trade, p. 32.) 'by one Cole, a captain of a ship employed by a company then trading to Carolina; for several ships going from England thither, and purchasing rice for Portugal, prevented the aforesaid captain of a loading. Upon his coming home, he possessed one Mr. Lowndes, a member of parliament, (who was frequently employed to prepare bills) with an opinion, that carrying rice directly to Portugal was a prejudice to the trade of England, and privately got a clause into an act to make it an enumerated commodity; by which means he secured a freight to himself. But the consequence proved a vast loss to the nation.'

"I find that this clause, 'privately got into an act, for the benefit of Captain Cole, to the vast loss of the nation,' is foisted into the 3d Anne, chapter 5th, intitled, 'An act for granting to her majesty a further subsidy on wines and merchandises imported;' with which it has no more connexion, than with 34th Edward I. 34th and 35th of Henry VIII. or the 25th Charles II. which provide that no person shall be taxed but by himself or his representatives."

to another, (their newspapers are full of such discourses,) "These people are not content with making a monopoly of us, (forbidding us to trade with any other country of Europe, and compelling us to buy every thing of them, though in many articles we could furnish ourselves ten, twenty, and even to fifty per cent. cheaper elsewhere; but now they have as good as declared they have a right to tax us *ad libitum* internally and externally; and that our constitutions and liberties shall all be taken away, if we do not submit to that claim."

"They are not content with the high prices at which they sell us their goods, but have now begun to enhance those prices by new duties; and by the expensive apparatus of a new set of officers, appear to extend an augmentation and multiplication of those burthens that shall still be more grievous to us. Our people have been foolishly fond of their superfluous modes and manufactures, to the impoverishing our own country, carrying off all our cash, and loading us with debt; they will not suffer us to restrain the luxury of our inhabitants, as they do that of their own, by laws; they can make laws to discourage or prohibit the importation of French superfluities; but though those of England are as ruinous to us as the French ones are to them, if we make a law of that kind, they immediately repeal it. Thus they get all our money from us by trade; and every profit we can any where make by our fisheries, our produce, or our commerce, centers finally with them;—but this does not signify. It is time, then, to take care of ourselves by the best means in our power. Let us unite in solemn resolution and engagements with and to each other, that we will give these new officers as little trouble as possible, by not consuming the British manufactures on which they are to levy the duties. Let us agree to consume no more of their expensive gewgaws. Let us live frugally, and let us industriously manufacture what we can for ourselves; thus we shall be able honorably to discharge the debts we already owe them; and after that, we may be able to keep some money in our country, not only for the uses of our internal commerce, but for the service of our gracious sovereign, whenever he shall have occasion for it, and think proper to require it of us in the old constitutional manner. For notwithstanding the reproaches thrown out against us in their public papers and pamphlets, notwithstanding we have been reviled in their senate as rebels and traitors, we are truly a loyal people. Scotland has had its rebellions, and England its plots against the present royal family; but *America is untainted with those crimes;* there is in it scarce a man, there is not a single native of our country, who is not firmly attached to his king by

principle and by affection. But a new kind of loyalty seems to be required of us, a loyalty to parliament; a loyalty that is to extend, it is said, to a surrender of all our properties, whenever a house of commons, in which there is not a single member of our choosing, shall think fit to grant them away without our consent; and to a patient suffering the loss of our privileges as Englishmen, if we cannot submit to make such surrender. We were separated too far from Britain by the ocean, but we were united to it by respect and love; so that we could at any time freely have spent our lives and little fortunes in its cause; but this unhappy new system of politics tends to dissolve those bands of union, and to sever us for ever."

These are the wild ravings of the, at present, half-distracted Americans. To be sure, no reasonable man in England can approve of such sentiments, and, as I said before, I do not pretend to support or justify them; but I sincerely wish, for the sake of the manufactures and commerce of Great Britain, and for the sake of the strength which a firm union with our growing colonies would give us; that these people had never been thus needlessly driven out of their senses. I am yours, &c. F. * S.

QUERIES FROM MR. STRAHAN,[1] AND DR. FRANKLIN'S ANSWER,

[*Referred to Part III. of Memoirs of the Life, 4to. p.* 179.]

TO DR. FRANKLIN.

DEAR SIR, *Nov.* 21, 1769.

IN the many conversations we have had together about our present disputes with North America, we perfectly agreed in wishing they may be brought to a speedy and happy conclusion. How this is to be done is not so easily ascertained.

Two objects, I humbly apprehend, his Majesty's servants have now in contemplation. 1st. To relieve the colonies from the taxes complained of, which they certainly had no hand in imposing. 2dly. To preserve the honor, the dignity, and the supremacy of the British legislature over all his Majesty's dominions.

As I know your singular knowledge of the subject in question, and am as

[1] Mr. Strahan was printer to the King, and representative in parliament for Malmsbury in Wiltshire. An intimacy of long standing had subsisted between him and Dr. Franklin.

fully convinced of your cordial attachment to his Majesty, and your sincere desire to promote the happiness equally of all his subjects, I beg you would in your own clear, brief, and explicit manner, send me an answer to the following questions: I make this request now, because this matter is of the utmost importance, and must very quickly be agitated. And I do it with the more freedom, as you know me and my motives too well, to entertain the most remote suspicion that I will make an improper use of any information you shall hereby convey to me.

1st. Will not a repeal of all the duties (that on tea excepted, which was before paid here on exportation, and of course no new imposition) fully satisfy the colonists?[1] If you answer in the negative,

2dly. Your reasons for that opinion?

3dly. Do you think the only effectual way of composing the present differences, is to put the Americans precisely in the situation they were in before the passing of the late Stamp Act?—If that is your opinion,

4thly. Your reasons for that opinion?

5thly. If this last method is deemed by the legislature and his Majesty's ministers to be repugnant to their duty as guardians of the just rights of the crown and of their fellow subjects, can you suggest any other way of terminating these disputes consistent with the ideas of justice and propriety conceived by the King's subjects on both sides of the Atlantic?

6thly. And if this method was actually followed, do you not think it would actually encourage the violent and factious part of the colonists to aim at still farther concessions from the mother-country?

7thly. If they are relieved in part only, what do you, as a reasonable and dis-

[1] In the year 1767, for the express purpose of raising a revenue in America; glass, red lead, white lead, painters' colours, paper, and *tea*, (which last article was subject to various home impositions) became charged by act of parliament, with new *permanent* duties payable *in the American ports*. Soon after, in the same sessions, (the East India Company promising indemnification for the experiment,) a *temporary* alteration was made with respect to the *home* customs or excise upon certain teas; in the hope that a deduction in the nominal imposition, by producing a more extended consumption, would give an increased sum to the exchequer. Mr. Strahan, comparing only the *amounts* of the imposed American duty, and the deducted home duty, determines that the Americans had suffered no new imposition. The Americans, it seems, thought otherwise. Had we established this precedent for a revenue, we thought we had every thing to hope; yet we affect surprise, when the colonies avoided an acquiescence, which by parity of reasoning gave *them* every thing to fear. B. V.

passionate man, and an equal friend to both sides, imagine will be the probable consequences?

The answers to these questions, I humbly conceive, will include all the information I want, and I beg you will favor me with them as soon as may be. Every well-wisher to the peace and prosperity of the British empire, and every friend to our truly happy constitution, must be desirous of seeing even the most trivial causes of dissension among our fellow-subjects removed. Our domestic squabbles, in my mind, are nothing to what I am speaking of. This you know much better than I do, and therefore I need add nothing farther to recommend this subject to your serious consideration. I am, with the most cordial esteem and attachment, dear Sir, your faithful and affectionate humble servant,

W. STRAHAN.

THE ANSWER.

DEAR SIR, *Craven Street, Nov.* 29, 1769.

BEING just returned to town from a little excursion, I find yours of the 21st, containing a number of queries that would require a pamphlet to answer them fully. You, however, desire only brief answers, which I shall endeavor to give.

Previous to your queries, you tell me that you apprehend his Majesty's servants have now "in contemplation, 1st. to relieve the colonists from the taxes complained of; 2dly. to preserve the honor, the dignity, and the supremacy of the British legislature over all his Majesty's dominions." I hope your information is good, and that what you suppose to be in contemplation, will be carried into execution, by repealing all the laws that have been made for raising a revenue in America, by authority of parliament, without the consent of the people there. The honor and dignity of the British legislature will not be hurt by such an act of justice and wisdom. The wisest councils are liable to be misled, especially in matters remote from their inspection. It is the persisting in an error, not the correcting it, that lessens the honor of any man or body of men. The supremacy of that legislature, I believe, will be best preserved by making a very sparing use of it; never but for the evident good of the colonies themselves, or of the whole British empire; never for the partial advantage of Britain, to their prejudice. By such prudent conduct, I imagine that supremacy may be gradually strengthened, and in time fully established; but otherwise, I apprehend it will be disputed, and lost in the dispute. At present the colonies consent and

submit to it for the regulations of general commerce; but a submission to acts of parliament was no part of their original constitution. Our former kings governed their colonies as they had governed their dominions in France, without the participation of British parliaments. The parliament of England never presumed to interfere in that prerogative till the time of the great rebellion, when they usurped the government of all the King's other dominions, Ireland, Scotland, &c. The colonies that held for the King, they conquered by force of arms, and governed afterwards as conquered countries: but New England having not opposed the parliament, was considered and treated as a sister-kingdom in amity with England (as appears by the Journals, *March* 10, 1642).

1st. "Will not a repeal of all the duties (that on tea excepted, which was before paid here on exportation, and of course no new imposition) fully satisfy the colonists?"

Answer, I think not.

2dly. "Your reasons for that opinion?"

A. Because it is not the sum paid in that duty on tea that is complained of as a burden, but the principle of the act expressed in the preamble; viz. that those duties were laid for the better support of government, and the administration of justice in the colonies.[1] This the colonists think unnecessary, unjust, and dangerous to their most important rights. *Unnecessary*, because in all the colonies (two or three new ones excepted)[2] government and the administration of justice were, and always had been well supported without any charge to Britain: *unjust*, as it has made such colonies liable to pay such charge for others in which they had no concern or interest: *dangerous*, as such mode of raising money for those purposes tended to render their assemblies useless; for if a revenue could be raised in the colonies for all the purposes of government by act of parliament, without grants from the people there, governors, who do not generally love assemblies, would never call them: they would be laid aside, and when nothing should depend on the people's good-will to government, their rights would be trampled on; they would be treated with contempt.—Another reason why I

[1] "Men may lose little property by an act which takes away all their freedom. When a man is robbed of a trifle on the highway, it is not the two-pence lost that makes the capital outrage. Would twenty shillings have ruined Mr. Hampden's fortune? No! but the payment of half twenty shillings, on the principle it was demanded, would have made him a slave." See Mr. Burke's speeches in 1774 and 1775. B. V.

[2] Nova Scotia, Georgia, the Floridas, and Canada.

think they would not be satisfied with such a partial repeal is, that their agreements not to import till the repeal takes place include the whole, which shows that they object to the whole, and those agreements will continue binding on them if the whole is not repealed.

3dly. "Do you think the only effectual way of composing the present differences, is to put the Americans precisely in the situation they were in before the passing of the late Stamp Act?"

A. I think so.

4thly. "Your reasons for that opinion?"

A. Other methods have been tried.—They have been rebuked in angry letters.—Their petitions have been refused or rejected by parliament.—They have been threatened with the punishments of treason by resolves of both houses.—Their assemblies have been dissolved, and troops have been sent among them: but all these ways have only exasperated their minds and widened the breach. Their agreements to use no more British manufactures have been strengthened, and these measures, instead of composing differences, and promoting a good correspondence, have almost annihilated your commerce with those countries, and greatly endanger the national peace and general welfare.

5thly. "If this last method is deemed by the legislature and his Majesty's ministers to be repugnant to their duty as guardians of the just rights of the crown, and of their fellow-subjects, can you suggest any other way of terminating these disputes, consistent with the ideas of justice and propriety conceived by the King's subjects on *both* sides the Atlantic?"

A. I do not see how that method can be deemed repugnant to the rights of the crown. If the Americans are put into their former situation, it must be by an act of parliament; in the passing of which by the King, the rights of the crown are exercised, not infringed. It is indifferent to the crown whether the aids received from America are granted by parliament here, or by the assemblies there, provided the quantum be the same; and it is my opinion, that more will be generally granted there voluntarily than can ever be exacted or collected from thence by authority of parliament.—As to the rights of fellow-subjects (I suppose you mean the people of Britain) I cannot conceive how those will be infringed by that method. They will still enjoy the right of granting their own money, and may still, if it pleases them, keep up their claim to the right of granting ours; a right they can never exercise properly, for want of a sufficient knowledge of us, our circumstances and abilities (to say nothing of the

little likelihood there is that we should ever submit to it), therefore a right that can be of no good use to them; and we shall continue to enjoy in fact the right of granting our money, with the opinion now universally prevailing among us, that we are free subjects of the King, and that fellow-subjects of one part of his dominions are not sovereigns over fellow-subjects in any other part.—If the subjects on the different sides of the Atlantic have different and opposite ideas of "justice and propriety," no one "method" can possibly be consistent with both. The best will be, to let each enjoy their own opinions, without disturbing them, when they do not interfere with the common good.

6thly. "And if this method were actually allowed, do you not think it would encourage the violent and factious part of the colonists to aim at still farther concessions from the mother-country?"

A. I do not think it would. There may be a few among them that deserve the name of factious and violent, as there are in all countries; but these would have little influence, if the great majority of sober reasonable people were satisfied. If any colony should happen to think that some of your regulations of trade are inconvenient to the general interest of the empire, or prejudicial to them without being beneficial to you; they will state these matters to parliament in petitions as heretofore; but will, I believe, take no violent steps to obtain what they may hope for in time from the wisdom of government here. I know of nothing else they can have in view: the notion that prevails here of their being desirous to set up a kingdom or commonwealth of their own, is, to my certain knowledge, entirely groundless. I therefore think, that on a total repeal of all duties, laid expressly for the purpose of raising a revenue on the people of America without their consent, the present uneasiness would subside; the agreements not to import would be dissolved; and the commerce florish as heretofore;—and I am confirmed in this sentiment by all the letters I have received from America, and by the opinions of all the sensible people who have lately come from thence, crown-officers excepted. I know, indeed, that the people of Boston are grievously offended by the quartering of troops among them,—as they think, contrary to law; and are very angry with the Board of Commissioners, who have calumniated them to government:—but as I suppose the withdrawing of those troops may be a consequence of reconciliating measures taking place; and that the commission also will be either dissolved, if found useless, or filled with more temperate and prudent men, if still deemed

useful and necessary; I do not imagine these particulars would prevent a return of the harmony so much to be wished.[1]

7th. "If they are relieved in part only, what do you, as a reasonable and dispassionate man, and an equal friend to both sides, imagine will be the probable consequence?"

A. I imagine, that repealing the offensive duties in part will answer no end to this country; the commerce will remain obstructed, and the Americans go on with their schemes of frugality, industry, and manufactures, to their own great advantage. How much that may tend to the prejudice of Britain, I cannot say; perhaps not so much as some apprehend, since she may in time find new markets.[2] But I think, if the union of the two countries continues to subsist, it will not hurt the general interest; for whatever wealth Britain loses by the failing of its trade with the colonies, America will gain; and the crown will receive equal aids from its subjects upon the whole, if not greater.

And now I have answered your questions as to what may be, in my opinion, the consequences of this or that supposed measure; I will go a little further, and tell you what I fear is more likely to come to pass in *reality*. I apprehend that the ministry, at least the American part of it, being fully persuaded of the right of parliament, think it ought to be enforced, whatever may be the consequences; and at the same time do not believe, there is even now any abatement of the trade between the two countries on account of these disputes; or, that if there is, it is small, and cannot long continue. They are assured by the crown-officers in America, that manufactures are impossible there; that the discontented are few, and persons of little consequence; that almost all the people of

---

[1] "The opposition (to Lord Rockingham's administration)" says Lord Chesterfield, "are for taking vigorous, as they call them, but I call them violent measures; not less than *les dragonades;* and to have the tax collected by the troops we have there. For my part, I never saw a froward child mended by whipping: and I would not have the mother become a step-mother." Letter, No. 360.

"Is it a certain maxim," pleads Mr. Burke, "that the fewer causes of dissatisfaction are left by government, the more the subject will be inclined to resist and rebel?" "I confess I do not feel the least alarm from the discontents which are to arise from putting people at their ease. Nor do I apprehend the destruction of this empire; from giving, by an act of free grace and indulgence, to two millions of my fellow-citizens, some share of those rights, upon which I have always been taught to value myself." Speeches in 1774 and 1775. B. V.

[2] Here is another mark of the author's candor and foresight.

property and importance are satisfied, and disposed to submit quietly to the taxing power of parliament; and that, if the revenue-acts are continued, and those duties only that are called anti-commercial be repealed, and others perhaps laid in stead; the power ere long will be patiently submitted to, and the agreements not to import be broken, when they are found to produce no change of measures here. From these and similar misinformations, which seem to be credited, I think it likely that no thorough redress of grievances will be afforded to America this session. This may inflame matters still more in that country; farther rash measures there, may create more resentment here, that may produce not merely ill-advised dissolutions of their assemblies, as last year, but attempts to dissolve their constitution;[1] more troops may be sent over, which will create more uneasiness; to justify the measures of government, your writers will revile the Americans in your newspapers, as they have already begun to do; treating them as miscreants, rogues, dastards, rebels, &c. to alienate the minds of the people here from them, and which will tend farther to diminish their affections to this country. Possibly, too, some of their warm patriots may be distracted enough to expose themselves by some mad action to be sent for hither; and government here be indiscreet enough to hang them, on the act of Henry VIII.[2] Mutual provocations will thus go on to complete the separation; and instead of that cordial affection that once and so long existed, and that harmony so suitable to the circumstances, and so necessary to the happiness, strength, safety, and welfare of both countries; an implacable malice and mutual hatred, such as we now see subsisting between the Spaniards and Portuguese, the Genoese and Corsicans, from the same original misconduct in the superior governments, will take place: the sameness of nation, the similarity of religion, manners, and language, not in the least preventing in our case, more than it did in theirs.—I hope, however, that this may all prove false prophecy, and that you and I may live to see as sincere and perfect a friendship established between our respective countries, as has so many years subsisted between Mr. Strahan, and his truly affectionate old friend, B. FRANKLIN.

---

[1] This was afterwards attempted by the British legislature, in the case of the Massachusett's Bay province. B. V.

[2] The lords and commons very prudently concurred in an address for this purpose; and the king graciously assured them of his compliance with their wishes. B. V.

STATE OF THE CONSTITUTION OF THE COLONIES, BY GOVERNOR POWNALL;[1]—WITH REMARKS BY Dr. FRANKLIN.

[PRINCIPLES.]

1. Wherever any Englishmen go forth without the realm, and make settlements *in partibus exteris*, 'These settlements as English settlements, and these inhabitants as English subjects, (carrying with them the laws of the land wherever they form colonies, and receiving his Majesty's protection by virtue of his royal charter'[2] or commissions of government,) 'have and enjoy all liberties and immunities of free and natural subjects, to all intents, constructions, and purposes whatsoever; as if they and every of them were born within the realm;'[3] and are bound by the like allegiance as every other subject of the realm.

Rem. The settlers of colonies in America did not carry with them the *laws of the land*, as being bound by them wherever they should settle. They left the realm to avoid the inconveniences and hardships they were under, where some of those laws were in force: particularly ecclesiastical laws, those for payment of tythes, and others. Had it been understood that they were to carry these laws with them, they had better have staid at home among their friends, unexposed to the risk and toils of a new settlement. They carried with them, a right to *such parts* of the *laws of the land*, as they should judge advantageous or useful to them: a right to be free from those they thought hurtful; and a right to make such others, as they should think necessary, not infringing the general rights of Englishmen; and such *new* laws they were to form, as agreeable as might be to the laws of England. *B. F.*

2. Therefore, the *common law of England*, and all *such statutes* as were enacted and in force at *the time* in which such settlers went forth, and such colonies and plantations were established, (except as hereafter excepted) together with all such alterations and amendments as the said common law may have received; is from time to time, and at all times, the law of those colonies and plantations.

---

[1] This *State of the Constitution of the Colonies* was printed at the close of 1769, and communicated to various persons, with a view to prevent mischief, from the misunderstandings between the government of Great Britain and the people of America. I have taken the liberty of ascribing it to Governor Pownall, as his name could have been no secret at the time.—Dr. Franklin's remarks (which from their early date are the more curious) are in manuscript; and from an observation in reply, signed T. P., appear to have been communicated to Governor Pownall.—The large type with the lower notes, mark *what belongs to Governor Pownall;* and the smaller type, mixed with the larger one, and signed B. F., marks *what belongs to Dr. Franklin.* B. V.

[2] Pratt and York. [3] General words in all charters.

Rem. So far as they have adopted it; by express laws or by practice. *B. F.*

3. Therefore all statutes touching the *right of the succession*, and settlement of the crown, with the statutes of treason relating thereto;[1] all statutes *regulating* or limiting the general powers and *authority of the crown*, and the exercise of jurisdiction thereof; all statutes *declaratory of the rights and liberty of the subject;* do extend to all British subjects in the colonies and plantations as of common right, and as if they and every of them were born within the realm.

Rem. It is doubted whether any settlement of the crown by parliament takes place in the colonies, otherwise than by the consent of the assemblies there. Had the rebellion in 1745 succeeded so far as to settle the Stuart family again on the throne, by act of parliament, I think the colonies would not have thought themselves bound by such act. They would still have adhered to the present family, as long as they could. *B. F.*

[Obs. in Reply. They are bound to the King and his successors, and we know no succession but by act of parliament. *T. P.*]

4. All statutes enacted *since* the establishment of colonies and plantations, do extend to and operate within the said colonies and plantations, in which statutes the same *are specially named.*

Rem. It is doubted whether any act of parliament should *of right* operate in the colonies: *in fact*, several of them have and do operate. *B. F.*

5. Statutes and customs which respect only the *special and local circumstances* of the realm, do not extend to and operate within said colonies and plantations, where no such special and local circumstances are found.—(Thus the *ecclesiastical and canon* law, and all *statutes respecting tythes;* the laws respecting *courts baron and copyholds;* the *game acts;* the statutes *respecting the poor*, and settlements; and all other laws and statutes having special reference to special and local circumstances and establishments within the realm;—do not

[1] [i. e.] All statutes respecting the general relation between the crown and the subject; not such as respect any particular or peculiar establishment of the realm of England. As for instance: by 13th and 14th of Car. II. c. 2. the supreme military power is declared to be in general, without limitation, in his Majesty, and to have always been of right annexed to the office of King of England, throughout all his Majesty's realms and dominions;—yet the enacting clause, which respects only the peculiar establishment of the militia of England, extends to the realm of England only: so that the supreme military power of the crown in all other his Majesty's realms and dominions stands, *as to this statute*, on the basis of its general power, unlimited. However, the several legislatures of his Majesty's kingdom of Ireland, of his dominions of Virginia, and of the several colonies and plantations in America; have, by laws to which the King hath given his consent, operating within the precincts of their several jurisdictions, limited the powers of it, and regulated the exercise thereof.

extend to and operate within these settlements, *in partibus exteris*, where no such circumstances or establishments exist).

Rem. These laws have no force in America: not merely because local circumstances differ; but because they have never been adopted, or brought over by acts of assembly or by practice in the courts. *B. F.*

6. No statutes made *since* the establishment of said colonies and plantations (except as above described in Articles 3 and 4), do extend to and operate within said colonies and plantations.

Query.—Would any statute made since the establishment of said colonies and plantations, which statute imported to *annul* and abolish the powers and jurisdictions of their respective constitutions of government, where the same was not contrary to the laws, or any otherwise forfeited or abated; or which statute imported to take away, or did take away, the rights and privileges of the settlers as British subjects;—would such statute, as of right, extend to and operate within said colonies and plantations?

Answer. No. The parliament has no such power. The charters cannot be altered but by consent of both parties, the King and the Colonies. *B. F.*

[COROLLARIES *from the foregoing Principles.*]

Upon the matters of fact, right and law, as above stated, it is, that the British subjects thus settled *in partibus exteris* without the realm, so long as they are excluded from an entire union with the realm as parts of and within the same; have a right to have (as they have) and to be governed by (as they are) a *distinct entire civil government;* of the like powers, pre-eminences, and jurisdictions, (conformable to the like rights, privileges, immunities, franchises, and civil liberties,) as are to be found and are established in the British government, respecting the British subject within the realm.

Rem. Right. B. F.

Hence also it is, that the *rights of the subject*, as declared in the Petition of Rights, that the *limitation of the prerogative* by the Act for abolishing the Star Chamber and for regulating the Privy Council, &c.; that the Habeas Corpus Act, the Statute of Frauds, the Bill of Rights, do of common right extend to, and are in force within, said colonies and plantations.

Rem. Several of these rights are established by special colony laws. If any are not yet so established, the colonies have right to such laws: and the covenant having been made in the charters by the king, for himself and his successors, such laws ought to receive the royal assent *as of right.* B. F.

Hence it is, that the *freeholders* within the precincts of these jurisdictions have (as of right they ought to have) a *share in the power of making those laws* which they are to be governed by, by the right which they have of sending their representatives, to act for them and to consent for them in all matters of legislation; which representatives, when met in general assembly, have, together with the crown, a right to perform and do all the like acts respecting the matters, things, and rights, within the precincts of their jurisdiction, as the parliament hath respecting the realm and British dominions.

Hence also it is, that all the *executive offices*, (from the supreme civil magistrate, as *locum tenens* to the king, down to that of constable and headborough,) must of right be established with all and the like powers, neither more nor less than as defined by the constitution and law, as in fact they are established.

Hence it is, that the *judicial offices and courts of justice*, established within the precincts of said jurisdictions, have, as they ought of right to have, all those jurisdictions and powers 'as fully and amply, to all intents and purposes whatsoever, as the courts of King's Bench, Common Pleas, and Exchequer, within his Majesty's kingdom of England, have, and ought to have; and are empowered to give judgment and award execution thereupon.'[1]

Hence it is, that by the possession, enjoyment, and exercise of his Majesty's *great seal*, delivered to his Majesty's governor, there is established within the precincts of the respective jurisdictions all the same and like *powers of Chancery* (except where by charters specially excluded), as his majesty's chancellor within his majesty's kingdom of England hath, and of right ought to have, by delivery of the great seal of England. And hence it is, that all the like rights, privileges, and powers, follow the use, exercise, and application of the great seal of each colony and plantation within the precincts of said jurisdiction; as doth, and ought of right, to follow the use, exercise, and application of the great seal.

Hence also it is, that *appeals in real actions*, 'whereby the lands, tenements, and hereditaments of British subjects may be drawn into question and disposed of,'[2] do not lie, as of right and by law they ought not to lie, to the king in council.

---

[1] Law in New England, confirmed by the crown, October 22, 1700.

[2] 16th Car. I. c. 10.

Hence also it is, that there is *not* any law now in being, whereby *the subject* within said colonies and plantations can be *removed*[1] *from the jurisdiction to which he is amenable* in all his rights, and through which his service and allegiance must be derived to the crown, and from which no appeal lies in criminal causes; so as that such subject may become amenable to a jurisdiction foreign to his natural and legal resiancy, to which he may be thereby transported, and under which he may be brought to trial and receive judgment, contrary to the rights and privileges of the subject, as declared by the spirit and intent, and especially by the 16th §. of the Habeas Corpus Act. And if the person of any subject within the said colonies and plantations *should* be seized or detained by any power issuing from any court, without the jurisdiction of the colony where he then had his legal resiancy, it would become the duty of the courts of justice *within* such colony (it is undoubtedly of their jurisdiction so to do) to issue the writ of *Habeas Corpus*.[2]

---

[1] The case of the court erected by Act of Parliament, 11th and 12th of William III. c. 7. (since the enacting of the Habeas Corpus Act) for the trial of piracies, felonies, and robberies committed in or upon the sea, or in any haven, river, creek, or place where the Admiral has jurisdiction, does no way affect this position: nor doth the 14th §. of the said statute, directing that the commissioners, of whom such court consists, may issue their warrant for apprehending such pirates, &c. in order to their being tried in the colonies, or sent into England, any way militate with the doctrine here laid down: nor can it be applied as the case of a jurisdiction actually existing, which supersedes the jurisdictions of the courts in the colonies and plantations, and as what authorises the taking the accused of such piracies, &c. from those jurisdictions, and the sending such, so taken, to England for trial. It cannot be applied as a case similar and in point to the application of an Act of Parliament (passed in the 35th of Hen. VIII. concerning the trial of treasons), lately recommended, in order to the sending persons accused of committing crimes in the plantations, to England for trial: because this Act of the 11th and 12th of William, cap. 7. respects crimes committed in places "where the Admiral has jurisdiction," and cases to which the jurisdiction of those provincial courts do not extend. In the case of treasons committed within the jurisdiction of the colonies and plantations, there are courts competent to try such crimes, and to give judgment thereupon, where the trials of such are regulated by laws to which the king hath given his consent; from which there lies no appeal, and wherein the king hath given power and instruction to his governor as to execution or respite of judgment. The said Act of Hen. VIII. which provides remedy for a case which supposes *the want* of due legal jurisdiction, cannot be any way, or by any rule, applied to a case where there *is* due legal and competent jurisdiction.

[2] The referring to an old Act made for the trial of treasons committed out of the realm, by such persons as had no legal resiancy but within the realm, and who were of the realm; applying the purview of that statute which was made to bring subjects of the realm, who had committed treason

Hence also it is, that in like manner as "the *command and disposition of the militia, and of all forces by sea and land,* and of all forts and places of strength; is, and by the laws of *England* ever was, the undoubted right of his Majesty, and his royal predecessors kings and queens of England, within all his Majesty's realms and dominions;"[1] in like manner as the supreme military power and command (so far as the constitution knows of and will justify its establishment) is inseparably annexed to, and forms an essential part of, the office of supreme civil magistrate, the office of King: in like manner, in all *governments under the King,* where the constituents are British subjects, and of full and perfect right entitled to the British laws and constitution, the supreme military command within the precincts of such jurisdictions, must be inseparably annexed to the office of supreme civil magistrate, (his Majesty's Regent, Vicegerent, Lieutenant, or Locum Tenens, in what form soever established;) so that the King cannot by any[2] commission of regency, by any commission or charter of government, separate or withdraw the supreme command of the military from the office of supreme civil magistrate; either by reserving this command in his own hands, to be exercised and executed independent of the civil power; or by granting a distinct commission to any military commander in chief, so to be exercised and executed; but more especially not within such jurisdictions where such supreme military power (so far as the constitution

---

out of the realm (where there was no criminal jurisdiction to which they could be amenable), to trial within the realm, under that criminal jurisdiction to which alone, by their legal resiancy and allegiance, they were amenable; applying this to the case of subjects whose *legal* resiancy is *without* the realm, and who are by that resiancy and their allegiance, amenable to a jurisdiction authorised and empowered to try and give judgment upon all capital offences whatsoever, without appeal; thus applying this statute so as to take up a proceeding, for which there is no legal process either by common or statute law as now established, but in defiance of which there is a legal process established by the Habeas Corpus Act, would be to disfranchise the subject in America of those rights and liberties, which, by statute and common law, he is now entitled to.

[1] 13th and 14th Car. II. c. 2.

[2] If the King was to absent himself for a time from the realm, and did as usual leave a regency in his place, (his locum tenens as supreme civil magistrate;) could he authorise and commission any military commander in chief, to command the militia forts and forces, *independent of such regency?* Could he do this in the colonies and plantations, where the governor is already, by commission or charter, or both under the great seal, military commander in chief; as part of (and inseparably annexed to) the office of supreme civil magistrate, his Majesty's locum tenens within said jurisdictions? If he could; then, while openly, by patent according to law, he appeared to establish a free British constitution, he might by a fallacy establish a military power and government.

knows and will justify the same) is *already* annexed and granted to the office of supreme civil magistrate. And hence it is, that the King cannot erect or establish any law martial or military command, by any commission which may supersede and not be subject to the supreme civil magistrate, within the respective precincts of the civil jurisdictions of said colonies and plantations; otherwise than in such manner as the said law martial and military commissions are annexed or subject to the supreme civil jurisdiction within his Majesty's realms and dominions of Great Britain and Ireland; and hence it is, that the establishment and exercise of such commands and commissions would be illegal.[1]

Rem. The King has *the command* of all military force in his dominions: but in every distinct state of his dominions there should be the consent of the parliament or assembly, (the representative body) to *the raising and keeping up* such military force. He cannot even raise troops and quarter them in another, without the consent of that other. He cannot *of right* bring troops raised in Ireland and quarter them in Britain, but with the consent of the parliament of Britain: nor carry to Ireland and quarter there, soldiers raised in Britain, without the consent of the Irish parliament; unless in time of war and cases of extreme exigency. In 1756, when the speaker went up to present the money-bills, he said, among other things, that "England was capable of fighting her own battles and defending herself: and although ever attached to your Majesty's person, ever at ease under your just government; they cannot forbear taking notice of some circumstances in the present situation of affairs, which nothing but the confidence in your justice, could hinder from alarming their most serious apprehensions. Subsidies to foreign princes, when already burthened with a debt scarce to be borne, cannot but be severely felt. *An army of* FOREIGN TROOPS, *a thing unprecedented, unheard of, unknown,* BROUGHT INTO ENGLAND, cannot but alarm," &c. &c. (See the Speech.)

N. B. These FOREIGN TROOPS were part of the King's subjects, Hanoverians, and all in *his* service; which the same thing as * * B. F.

[1] Governor P. accompanied this paper to Dr. F. with a sort of prophetic remark. After stating that these theorems, and their application to existing cases, were intended to remedy the prejudice, indigestion, indecision, and errors then prevailing either in opinions or conduct; he adds, "The very attention to the investigation may lead to the discovery of *some truths respecting the whole British Empire,* then little thought of, and scarce even suspected; and which perhaps it would not be *prudent* at this time to mark and point out." The minister, however, judged the *discussion* of *dubious* rights over growing states, a better policy than possession, discretion, and silence: he turned civilian, and lost an empire. B. V.

Preface by the British Editor [Dr. Franklin] to "The Votes and Proceedings of the Freeholders, and other Inhabitants of the town of Boston, in town-meeting assembled, according to law, (published by order of the town,) &c."[1]

[*See Memoirs of the Life, Part III. p.* 179. *4to. Ed.*]

All accounts of the discontent so general in our colonies, have of late years been industriously smothered and concealed here; it seeming to suit the views of the American minister[2] to have it understood, that by his great abilities, all faction was subdued, all opposition suppressed, and the whole country quieted. That the true state of affairs there may be known, and the true causes of that discontent well understood; the following piece (not the production of a private writer, but the unanimous act of a large American city), lately printed in New England, is republished here. This nation, and the other nations of Europe, may thereby learn, with more certainty, the grounds of a dissension, that possibly may, sooner or later, have consequences interesting to them all.

The colonies had, from their first settlement, been governed with more ease, than perhaps can be equalled by any instance in history of dominions so distant. Their affection and respect for this country, while they were treated with kindness, produced an almost implicit obedience to the instructions of the Prince, and even to acts of the British parliament; though the right of binding them by a legislature, in which they were unrepresented, was never clearly understood. That respect and affection produced a partiality in favor of every thing that

---

[1] "Boston printed: London reprinted, and sold by J. Wilkie, in St. Paul's Church-yard, 1773."

It is said, that this little piece very much irritated the ministry. It was their determination, that the Americans should receive teas only from Great Britain. And accordingly the East India Company sent out large cargoes under their protection. The colonists everywhere refused, either entrance, or else permission of sale, except at Boston, where, the force of government preventing more moderate measures, certain persons in disguise threw it into the sea.

The preamble of the stamp act produced the tea act; the tea act produced violence; violence, acts of parliament; acts of parliament, a revolt. "A little neglect," says *poor Richard*, "may breed great mischief: for want of a nail the shoe was lost; for want of a shoe the horse was lost; for want of a horse the rider was lost; being overtaken and slain by the enemy; all for want of a little care about a horse-shoe nail." B. V.

[2] Lord Hilsborough.—This nobleman, already first Lord of trade, was introduced in 1768 into the *new-titled office* of Secretary of State for the Colonies." B. V.

was English; whence their preference of English modes and manufactures; their submission to restraints on the importation of foreign goods, which they had but little desire to use; and the monopoly we so long enjoyed of their commerce, to the great enriching of our merchants and artificers. The mistaken policy of the stamp act first disturbed this happy situation; but the flame thereby raised was soon extinguished by its repeal, and the old harmony restored, with all its concomitant advantage to our commerce. The subsequent act of another administration, which, not content with an established exclusion of foreign manufactures, began to make our own merchandise dearer to the consumers there, by heavy duties; revived it again: and combinations were entered into throughout the continent, to stop trading with Britain till those duties should be repealed. All were accordingly repealed but one—*the duty on tea*. This was reserved (professedly so) as a standing claim and exercise of the right assumed by parliament of laying such duties.[1] The colonies, on this repeal, retracted their agreement, so far as related to all other goods, except that on which the duty was retained. This was trumpeted here by the minister for the colonies as a triumph; there it was considered only as a decent and equitable measure, showing a willingness to meet the mother-country in every advance towards a reconciliation, and a disposition to a good understanding so prevalent, that possibly they might soon have relaxed in the article of tea also. But the system of commissioners of customs, officers without end, with fleets and armies for collecting and enforcing those duties, being continued; and these acting with much indiscretion and rashness, (giving great and unnecessary trouble and obstruction to business, commencing unjust and vexatious suits, and harassing commerce in all its branches, while that the minister kept the people in a constant state of irritation by instructions which appeared to have no other end than the gratifying his private resentments,[2]) occasioned a persevering adherence to their resolutions in that particular: and the event should be a lesson to ministers, not to risk through pique, the obstructing any

[1] Mr. Burke says (in his speech in 1774), that this preambulary tax had lost us at once the benefit of the west and of the east; had thrown open folding-doors to contraband; and would be the means of giving the profits of the colony-trade to every nation, but ourselves. He adds, in the same place, "It is indeed a tax of sophistry, a tax of pedantry, a tax of disputation, a tax of war and rebellion, a tax for any thing but benefit to the imposers, or satisfaction to the subject." B. V.

[2] Some of his circular letters had been criticised, and exposed by one or two of the American assemblies.

one branch of trade; since the course and connection of general business may be thereby disturbed to a degree, impossible to be foreseen or imagined. For it appears that the colonies, finding their humble petitions to have this duty repealed, were rejected and treated with contempt; and that the produce of the duty was applied to the rewarding, with undeserved salaries and pensions, every one of their enemies; the duty itself became more odious, and their resolution to share it more vigorous and obstinate. The Dutch, the Danes, and French, took this opportunity thus offered them by our imprudence; and began to smuggle their teas into the plantations. At first this was something difficult; but at length, as all business is improved by practice, it became easy. A coast fifteen hundred miles in length could not in all parts be guarded, even by the whole navy of England; especially where their restraining authority was by all the inhabitants deemed unconstitutional, the smuggling of course considered as patriotism. The needy wretches, too, who, with small salaries, were trusted to watch the ports day and night, in all weathers, found it easier and more profitable, not only to wink, but to sleep in their beds; the merchant's pay being more generous than the King's. Other India goods, also, which, by themselves, would not have made a smuggling voyage sufficiently profitable, accompanied tea to advantage; and it is feared the cheap French silks, formerly rejected as not to the taste of the colonies, may have found their way with the wares of India; and now established themselves in the popular use and opinion.

It is supposed that at least a million of Americans drink tea twice a day, which, at the first cost here, can scarce be reckoned at less than half a guinea a head per annum. This market, that in the five years which have run on since the act passed, would have paid 2,500,000 guineas for tea alone, into the coffers of the Company, we have wantonly lost to foreigners.—Meanwhile it is said the duties have so diminished, that the whole remittance of the last year amounted to no more than the pitiful sum of 85*l.*[1] for the expense of some hundred thousands, in armed ships and soldiers, to support the officers. Hence the tea, and other India goods, which might have been sold in America, remain rotting in the Company's warehouses;[2] while those of foreign ports are known

[1] "*Eighty-five pounds*, I am assured, my lords, is the whole equivalent we have received for all the hatred and mischief, and all the infinite losses this kingdom has suffered during that year, in her disputes with North America." See the Bishop of St. Asaph's speech, *intended to have been spoken*.

[2] At this time they contained many millions of pounds of tea, including the usual stock on hand.

to be cleared by the American demand. Hence, in some degree, the Company's inability to pay their bills; the sinking of their stock, by which millions of property have been annihilated; the lowering of their dividend, whereby so many must be distressed; the loss to government of the stipulated 400,000l. a year,[1] which must make a proportionable reduction in our savings towards the discharge of our enormous debt: and hence, in part, the severe blow suffered by credit in general,[2] to the ruin of many families; the stagnation of business in Spitalfields and at Manchester, through want of vent for their goods;—with other future evils, which, as they cannot, from the numerous and secret connections in general commerce, easily be foreseen, can hardly be avoided.

RULES FOR REDUCING A GREAT EMPIRE TO A SMALL ONE; PRESENTED TO A LATE MINISTER, WHEN HE ENTERED UPON HIS ADMINISTRATION.[3]

[*Referred to Part II. of* PRIVATE CORRESPONDENCE, *Letter to Governor Franklin, Oct.* 6, 1773.]

An ancient sage valued himself upon this, that though he could not fiddle, he knew how to make a great city of a little one. The science that I, a modern simpleton, am about to communicate, is the very reverse.

I address myself to all ministers who have the management of extensive dominions, which from their very greatness have become troublesome to govern—because the multiplicity of their affairs leaves no time for fiddling.

1. In the first place, gentlemen, you are to consider, that a great empire, like a great cake, is most easily diminished at the edges. Turn your attention

---

Mr. Burke, in his speech in 1774, supposes that America might have given a vent for ten millions of pounds. This seems to have been the greater part of the whole quantity. B. V.

[1] On account of a temporary compromise of certain disputes with government. B. V.

[2] Seen in certain memorable mercantile failures in the year 1772. B. V.

[3] These rules first appeared in a London newspaper, about the beginning of the year 1774, and have several times since been introduced into our public prints.—The minister alluded to is supposed to be the Earl of Hilsborough.

"The causes and motions of seditions (says Lord Bacon) are, innovation in religion, taxes, alteration of laws and customs, breaking of privileges, general oppression, advancement of unworthy persons, strangers, dearths, disbanded soldiers, factions grown desperate, and whatsoever in offending people joineth and knitteth them in a common cause." B. V.

therefore first to your *remotest* provinces; that, as you get rid of them, the next may follow in order.

2. That the possibility of this separation may always exist, take special care the provinces are *never incorporated with the mother-country;* that they do not enjoy the same common rights, the same privileges in commerce; and that they are governed by severer laws, all of your enacting, without allowing them any share in the choice of the legislators. By carefully making and preserving such distinctions, you will (to keep to my simile of the cake) act like a wise gingerbread baker; who, to facilitate a division, cuts his dough half through in those places where, when baked, he would have it broken to pieces.

3. Those remote provinces have perhaps been acquired, purchased, or conquered, at the sole expense of the settlers or their ancestors; without the aid of the mother-country. If this should happen to increase her strength, by their growing numbers, ready to join in her wars; her commerce, by their growing demand for her manufactures; or her naval power, by greater employment for her ships and seamen, they may probably suppose some merit in this, and that it entitles them to some favor: you are therefore to *forget it all, or resent it* as if they had done you injury. If they happen to be zealous whigs, friends of liberty, nurtured in revolution principles; remember all that to their prejudice, and contrive to punish it: for such principles, after a revolution is thoroughly established, are of no more use; they are even odious and abominable.

4. However peaceably your colonies have submitted to your government, shown their affection to your interests, and patiently borne their grievances; you are to suppose them *always inclined to revolt*, and treat them accordingly. Quarter troops among them, who by their insolence may provoke the rising of mobs, and by their bullets and bayonets suppress them. By this means, like the husband who uses his wife ill from suspicion, you may in time convert your suspicions into realities.

5. Remote provinces must have governors and judges, to represent the royal person, and execute everywhere the delegated parts of his office and authority. You ministers know that much of the strength of government depends on the opinion of the people; and much of that opinion on the *choice of rulers* placed immediately over them. If you send them wise and good men for governors, who study the interest of the colonists, and advance their prosperity; they will think their king wise and good, and that he wishes the welfare of his subjects. If you send them learned and upright men for judges, they will think him a

lover of justice. This may attach your provinces more to his government. You are therefore to be careful who you recommend for those offices. If you can find prodigals who have ruined their fortunes, broken gamesters or stock-jobbers; these may do well as governors; for they will probably be rapacious, and provoke the people by their extortions. Wrangling proctors and petti-fogging lawyers too, are not amiss; for they will be for ever disputing and quarrelling with their little parliaments. If withal they should be ignorant, wrong-headed and insolent, so much the better. Attorneys' clerks and Newgate solicitors will do for chief-justices, especially if they hold their places during your pleasure:—and all will contribute to impress those ideas of your government that are proper for a people you would wish to renounce it.

6. To confirm these impressions, and strike them deeper, whenever the injured come to the capital with complaints of mal-administration, oppression, or injustice; *punish such suitors* with long delay, enormous expense, and a final judgment in favor of the oppressor. This will have an admirable effect every way. The trouble of future complaints will be prevented, and governors and judges will be encouraged to farther acts of oppression and injustice; and thence the people may become more disaffected, and at length desperate.

7. When such governors have crammed their coffers, and made themselves so odious to the people that they can no longer remain among them with safety to their persons, *recal and reward* them with pensions. You may make them baronets too, if that respectable order should not think fit to resent it. All will contribute to encourage new governors in the same practice; and make the supreme government detestable.

8. If, when you are engaged in war, your colonies should vie in liberal aids of men and money against the common enemy, upon your simple requisition, and give far beyond their abilities,—reflect that a penny taken from them by your power, is more honorable to you than a pound presented by their benevolence; *despise therefore their voluntary grants*, and resolve to harass them with *novel taxes*. They will probably complain to your parliament that they are taxed by a body in which they have no representative, and that this is contrary to common right. They will petition for redress. Let the parliament flout their claims, reject their petitions, refuse even to suffer the reading of them, and treat the petitioners with the utmost contempt. Nothing can have a better effect in producing the alienation proposed; for though many can forgive injuries, none ever forgave contempt.

9. In laying these taxes, *never regard the heavy burthens* those remote people already undergo; in defending their own frontiers, supporting their own provincial government, making new roads, building bridges, churches, and other public edifices; which in old countries have been done to your hands, by your ancestors; but which occasion constant calls and demands on the purses of a new people. Forget the restraint you lay on their trade for your own benefit, and the advantage a monopoly of this trade gives your exacting merchants. Think nothing of the wealth those merchants and your manufacturers acquire by the colony commerce; their increased ability thereby to pay taxes at home; their accumulating in the price of their commodities, most of those taxes, and so levying them from their consuming customers: all this, and the employment and support of thousands of your poor by the colonists, you are entirely to forget. But remember to make your arbitrary tax more grievous to your provinces, by public declarations importing that your power of taxing them has *no limits;* so that when you take from them without their consent a shilling in the pound, you have a clear right to the other nineteen. This will probably weaken every idea of security in their property, and convince them, that under such a government they have nothing they can call their own; which can scarce fail of producing the happiest consequences!

10. Possibly indeed some of them might still comfort themselves, and say, "Though we have no property, we have yet something left that is valuable; we have constitutional *liberty both of person and of conscience.* This king, these lords, and these commons, who it seems are too remote from us to know us and feel for us, cannot take from us our Habeas Corpus right, or our right of trial by a jury of our neighbors: they cannot deprive us of the exercise of our religion, alter our ecclesiastical constitution, and compel us to be Papists, if they please, or Mahometans." To annihilate this comfort, begin by laws to perplex their commerce with infinite regulations, impossible to be remembered and observed: ordain seizures of their property for every failure; take away the trial of such property by jury, and give it to arbitrary judges of your own appointing, and of the lowest characters in the country, whose salaries and emoluments are to arise out of the duties or condemnations, and whose appointments are during pleasure. Then let there be a formal declaration of both houses, that opposition to your edicts is treason, and that persons suspected of treason in the provinces may, according to some obsolete law, be seized and sent to the metropolis of the empire for trial; and pass an act, that those there

charged with certain other offences, shall be sent away in chains from their friends and country to be tried in the same manner for felony. Then erect a new court of inquisition among them, accompanied by an armed force, with instructions to transport all such suspected persons; to be ruined by the expense, if they bring over evidences to prove their innocence; or be found guilty and hanged if they cannot afford it. And lest the people should think you cannot possibly go any farther, pass another solemn declaratory act, "that king, lords, commons, had, have, and of right ought to have, full power and authority to make statutes of sufficient force and validity to bind the unrepresented provinces *in all cases whatsoever*." This will include spiritual with temporal, and taken together, must operate wonderfully to your purpose; by convincing them, that they are at present under a power something like that spoken of in the Scriptures, which can not only kill their bodies, but damn their souls to all eternity, by compelling them, if it pleases, to worship the devil.

11. To make your taxes more odious, and more likely to procure resistance, send from the capital a *board of officers* to superintend the collection, *composed of the most indiscreet*, ill-bred, and insolent you can find. Let these have large salaries out of the extorted revenue, and live in open grating luxury upon the sweat and blood of the industrious; whom they are to worry continually with groundless and expensive prosecutions before the above-mentioned arbitrary revenue-judges; all at the cost of the party prosecuted, though acquitted, because the king is to pay no costs. Let these men, by your order, be exempted from all the common taxes and burthens of the province, though they and their property are protected by its laws. If any revenue officers are suspected of the least tenderness for the people, discard them. If others are justly complained of, protect and reward them. If any of the under officers behave so as to provoke the people to drub them, promote those to better offices; this will encourage others to procure for themselves such profitable drubbings, by multiplying and enlarging such provocations, and all will work towards the end you aim at.

12. Another way to make your tax odious, is to *misapply the produce of it*. If it was originally appropriated for the defence of the provinces, and the better support of government, and the administration of justice where it may be necessary; then apply none of it to that defence; but bestow it where it is not necessary, in augmenting salaries or pensions to every governor who has distinguished himself by his enmity to the people, and by calumniating them to

their sovereign. This will make them pay it more unwillingly, and be more apt to quarrel with those that collect it and those that imposed it; who will quarrel again with them; and all shall contribute to your own purpose, of making them weary of your government.

13. If the people of any province have been accustomed to *support their own governors and judges* to satisfaction, you are to apprehend that such governors and judges may be thereby influenced to treat the people kindly, and to do them justice. This is another reason for applying part of that revenue in larger salaries to such governors and judges, given, as their commissions are, during *your* pleasure only; forbidding them to take any salaries from their provinces; that thus the people may no longer hope any kindness from their governors, or (in crown cases) any justice from their judges.—And as the money thus misapplied in one province is extorted from all, probably all will resent the misapplication.

14. If the parliaments of your provinces should dare to claim rights, or complain of your administration; order them to be harassed with *repeated dissolutions*.—If the same men are continually returned by new elections; adjourn their meetings to some country village, where they cannot be accommodated, and there keep them during pleasure; for this, you know, is your prerogative; and an excellent one it is, as you may manage it to promote discontents among the people, diminish their respect, and increase their disaffection.

15. Convert the brave honest officers of your *navy* into pimping tide-waiters and colony officers of the *customs*. Let those who in time of war fought gallantly in defence of the commerce of their countrymen, in peace be taught to prey upon it. Let them learn to be corrupted by great and real smugglers; but (to show their diligence) scour with armed boats every bay, harbour, river, creek, cove, or nook throughout the coast of your colonies; stop and detain every coaster, every wood-boat, every fisherman; tumble their cargoes and even their ballast inside out, and upside down; and if a pennyworth of pins is found un-entered, let the whole be seized and confiscated. Thus shall the trade of your colonists suffer more from their friends in time of peace, than it did from their enemies in war.—Then let these boats' crews land upon every farm in their way, rob their orchards, steal their pigs and poultry, and insult the inhabitants. If the injured and exasperated farmers, unable to procure other justice, should attack the aggressors, drub them, and burn their boats; you are to call

this *high treason and rebellion*, order fleets and armies into their country, and threaten to carry all the offenders three thousand miles to be hanged, drawn, and quartered.—O! this will work admirably!

16. If you are told of *discontents* in your colonies, never believe that they are general, or that you have given occasion for them; therefore do not think of applying any remedy, or of changing any offensive measure.—Redress no grievance, lest they should be encouraged to demand the redress of some other grievance. Grant no request that is just and reasonable, lest they should make another that is unreasonable.—Take all your informations of the state of the colonies from your governors and officers in enmity with them. Encourage and reward these leasing-makers; secrete their lying accusations, lest they should be confuted; but act upon them as the clearest evidence;—And believe nothing you hear from the friends of the people. Suppose all *their* complaints to be invented and promoted by a few factious demagogues, whom, if you could catch and hang, all would be quiet.—Catch and hang a few of them accordingly; and the blood of the martyrs shall work miracles in favor of your purpose.[1]

17. If you see *rival nations* rejoicing at the prospect of your disunion with your provinces, and endeavoring to promote it; if they translate, publish and applaud all the complaints of your discontented colonists, at the same time privately stimulating you to severer measures; let not that alarm or offend you; Why should it? since you all mean the same thing.

18. If any colony should *at their own charge erect a fortress* to secure their *port* against the fleets of a foreign enemy, get your governor to betray that fortress into your hands. Never think of paying what it cost the country, for that would look, at least, like some regard for justice; but turn it into a citadel, to awe the inhabitants and curb their commerce. If they should have lodged in such fortress the very arms they bought and used to aid you in your conquests, seize them all; it will provoke like ingratitude added to robbery.—One

[1] One of the American writers affirms, 'That there has not been a single instance in which *they* have complained, without being rebuked; or in which they have been complained *against*, without being punished.'—A fundamental mistake in the minister occasioned this. Every individual in New England (the peccant country) was held a coward or a knave, and the disorders which spread abroad there, were treated as the result of the *too great lenity* of Britain! By the aid of this short and benevolent rule, judgment was ever wisely predetermined; to the shutting out redress on the one hand, and enforcing every rigor of punishment on the other. B. V.

admirable effect of these operations will be, to discourage every other colony from erecting such defences, and so their and your enemies may more easily invade them; to the great disgrace of your government, and of course the furtherance of your project.

19. Send armies into their country under pretence of protecting the inhabitants; but, instead of garrisoning the forts on their frontiers with those troops, to prevent incursions, demolish those forts; and order the troops into the heart of the country, that the savages may be encouraged to attack the frontiers,[1] and that the troops may be protected by the inhabitants: this will seem to proceed from your *ill-will or your ignorance*, and contribute farther to produce and strengthen an opinion among them, that you are no longer fit to govern them.[2]

20. Lastly, invest the *general of your army in the provinces*, with great and unconstitutional powers, and free him from the control of even your own civil governors. Let him have troops enow under his command, with all the fortresses in his possession; and who knows but (like some provincial generals in the Roman empire, and encouraged by the universal discontent you have produced) he may take it into his head to set up for himself? If he should, and you have carefully practised these few excellent rules of mine, take my word for it, all the provinces will immediately join him;—and you will that day (if you have not done it sooner) get rid of the trouble of governing them, and all the plagues attending their commerce and connexion, from thenceforth and for ever.

---

[1] I am not versed in Indian affairs, but I find that in April 1773, the assembled chiefs of the western nations told one of our Indian agents, 'that they remembered their father, the king of Great Britain's message, delivered to them last fall; of demolishing Fort Pittsburg [on the Ohio] and removing the soldiers with their sharp-edged weapons out of the country;—this gave them great pleasure, as it was a strong proof of his paternal kindness towards them.' (See *Considerations on the Agreement with Mr. T. Walpole for Lands upon the Ohio*, p. 9.) This is general history: I attempt no application of facts, personally invidious. B. V.

[2] As the reader may be inclined to divide his belief between the wisdom of ministry, and the candor and veracity of Dr. Franklin, I shall inform him that two contrary objections may be made to the truth of this representation. The first is, that the conduct of Great Britain is made *too* absurd for possibility; and the second, that it is not made absurd *enough* for fact. If we consider that this writing does not include the measures subsequent to 1773, the latter difficulty is easily set aside. The former, I can only solve by the many instances in history, where the infatuation of individuals has brought the heaviest calamities upon nations. B. V.

[PAPER *written in England by Benjamin Franklin, to discourage the intended Act for preventing Emigration.*]

TO THE PRINTER OF THE PUBLIC ADVERTISER.

SIR,

YOU give us in your paper of Tuesday the 16th of November, what is called "the Plan of an Act to be proposed at the next meeting of Parliament to prevent the Emigration of our People." I know not from what authority it comes, but as it is very circumstantial, I suppose some such plan may be really under consideration, and that this is thrown out to feel the pulse of the public. I shall therefore, with your leave, give my sentiments of it in your paper.

During a century and half that Englishmen have been at liberty to remove if they pleased to America, we have heard of no law to restrain that liberty, and confine them as prisoners in this island. Nor do we perceive any ill effects produced by their emigration. Our estates, far from diminishing in value through a want of tenants, have been in that period more than doubled; the lands in general are better cultivated; their increased produce finds a ready sale at an advanced price, and the complaint has for some time been, not that we want mouths to consume our meat, but that we want meat for our number of mouths.

Why then is such a restraining law *now* thought necessary? A paragraph in the same paper from the *Edinburgh Courant*, may perhaps throw some light upon this question. We are there told, "that 1500 people have emigrated to America from the shire of Sutherland within these two years, and carried with them 7,500*l.* sterling; which exceeds a year's rent of the whole county; that the single consideration of the *misery* which most of these people *must suffer* in America, independent of the loss of men and money to the mother-country, should engage the attention not only of the *landed interest, but of administration.*" The humane writer of this paragraph, may, I fancy, console himself with the reflection, that perhaps the apprehended future sufferings of those emigrants will never exist; for that it was probably the authentic accounts they had received from friends already settled there, of the felicity to be enjoyed in that country, with a thorough knowledge of their own misery at home, which induced their removal. And, as a politician, he may be comforted by assuring himself, that if they really meet with greater misery in America, their future

letters lamenting it, will be more credited than the *Edinburgh Courant*, and effectually, without a law put a stop to the emigration. It seems some of the Scottish chiefs, who delight no longer to live upon their estates in the honorable independence they were born to, among their respecting tenants, but choose rather a life of luxury, though among the dependants of a court, have lately raised their rents most grievously to support the expense. The consuming of those rents in London, though equally prejudicial to the poor county of Sutherland, no Edinburgh newspaper complains of; but now, that the oppressed tenants take flight, and carry with them what might have supported the landlord's London magnificence, he begins to *feel* for the MOTHER-COUNTRY, and its enormous *loss* of 7,500*l.* carried to her colonies! Administration is called upon to remedy the evil, by another abridgment of ENGLISH LIBERTY. And surely administration should do something for these gentry, as they do any thing for administration.

But is there not an easier remedy? Let them return to their family seats, live among their people, and instead of fleecing and skinning, patronise and cherish them; promote their interest, encourage their industry, and make their situation comfortable. If the poor folks are happier at home than they can be abroad, they will not lightly be prevailed with to cross the ocean. But can their lord blame them for leaving home in search of better living, when he first set them the example?

I would consider the proposed law,

1st. As to the NECESSITY of it.

2dly. The PRACTICABILITY.

3rdly. The POLICY, if practicable.

And, 4thly. The JUSTICE of it.

Pray spare me room for a few words on each of these heads.

1st. As to the NECESSITY of it.

If any country has more people than can be comfortably subsisted in it, some of those who are incommoded may be induced to emigrate. As long as the new situation shall be *far* preferable to the old, the emigration may possibly continue. But when many of those who at home interfered with others of the same rank, (in the competition for farms, shops, business, offices, and other means of subsistence) are gradually withdrawn, the inconvenience of that competition ceases; the number remaining no longer half starve each other; they

find they can now subsist comfortably, and though perhaps not quite so well as those who have left them, yet, the inbred attachment to a native country is sufficient to overbalance a moderate difference; and thus the emigration ceases naturally. The waters of the ocean may move in currents from one quarter of the globe to another, as they happen in some places to be accumulated and in others diminished; but no law beyond the law of gravity, is necessary to prevent their abandoning any coast entirely. Thus the different degrees of happiness of different countries and situations, find, or rather make their level by the flowing of people from one to another, and where that level is once found, the removals cease. Add to this, that even a real deficiency of people in any country, occasioned by a wasting war or pestilence, is speedily supplied, by earlier and more prolific marriages, encouraged by the greater facility of obtaining the means of subsistence. So that a country half depopulated would soon be repeopled, till the means of subsistence were equalled by the population. All increase beyond that point, must perish or flow off into more favorable situations. Such overflowings there have been of mankind in all ages, or we should not now have had so many nations. But to apprehend absolute depopulation from that cause, and call for a law to prevent it, is calling for a law to stop the Thames, lest its waters, by what leave it daily at Gravesend, should be quite exhausted. Such a law therefore I do not conceive to be NECESSARY.

2dly. As to the PRACTICABILITY.

When I consider the attempts of this kind that have been made, first in the time of Archbishop Laud, by orders of council, to stop the Puritans who were flying from his persecutions into New England, and next by Louis XIV. to retain in his kingdom the persecuted Huguenots; and how ineffectual all the power of our crown, with which the Archbishop armed himself, and all the more absolute power of that great French monarch, were, to obtain the end for which they were exerted: when I consider too, the extent of coast to be guarded, and the multitude of cruisers necessary effectually to make a prison of the island for this confinement of free Englishmen, who naturally love liberty, and would probably by the very restraint be more stimulated to break through it; I cannot but think such a law IMPRACTICABLE. The offices would not be applied to for licences, the ports would not be used for embarkation. And yet the people disposed to leave us, would, as the Puritans did, get away by shipfuls.

3dly. As to the POLICY of the Law.

Since I have shown there is no danger of depopulating Britain, but that the place of those that depart will soon be filled up equal to the means of obtaining a livelihood, let us see whether there are not some general *advantages* to be expected from the present emigration. The new settlers in America, finding plenty of subsistence, and land easily acquired whereon to seat their children, seldom postpone marriage through fear of poverty. Their natural increase is therefore in a proportion far beyond what it would have been if they had remained here. New farms are daily everywhere forming in those immense forests; new towns and villages rising; hence a growing demand for our merchandise, to the greater employment of our manufacturers and the enriching of our merchants. By this natural increase of people, the strength of the empire is increased; men are multiplied, out of whom new armies may be formed on occasion, or the old recruited. The long-extended sea coast too, of that vast country, the great maritime commerce of its ports with each other, its many navigable rivers and lakes, and its plentiful fisheries, breed multitudes of seamen, besides those created and supported by its voyages to Europe; a thriving nursery this, for the manning of our fleets in time of war, and maintaining our importance among foreign nations, by that navy which is also our best security against invasions from our enemies. An extension of empire by conquest of inhabited countries is not so easily obtained, it is not so easily secured; it alarms more the neighboring states; it is more subject to revolts, and more apt to occasion new wars. The increase of dominion by colonies proceeding from yourselves, and by the natural growth of your own people, cannot be complained of by your neighbors as an injury; none have a right to be offended with it. Your new possessions are therefore more secure, they are more cheaply gained, they are attached to your nation by natural alliance and affection, and thus they afford an additional strength more certainly to be depended on, than any that can be acquired by a conquering power, though at an immense expense of blood and treasure. These, methinks, are national advantages that more than equiponderate with the inconveniences suffered by a few Scotch or Irish landlords, who perhaps may find it necessary to abate a little of their present luxury, or of those advanced rents they now so unfeelingly demand. From these considerations, I think I may conclude that the restraining law proposed, would, if practicable, be IMPOLITIC.

4thly. As to the JUSTICE of it.

I apprehend that every Briton who is made unhappy at home, has a right to remove from any part of his king's dominions into those of any other prince, where he can be happier. If this should be denied me, at least it will be allowed that he has a right to remove into any other part of the same dominions. For by this right so many Scotchmen remove into England, easing their own country of its supernumeraries, and benefiting ours by their industry. And this is the case with those who go to America. Will not these Scottish lairds be satisfied unless a law passes to pin down all tenants to the estate they are born on, *(adscripti glebæ)* to be bought and sold with it? God has given to the beasts of the forest, and to the birds of the air, a right, when their subsistence fails in one country, to migrate to another, where they can get a more comfortable living; and shall man be denied a privilege enjoyed by brutes, merely to gratify a few avaricious landlords? Must misery be made *permanent*, and suffered by *many* for the emolument of *one?* While the increase of human beings is prevented, and thousands of their offspring stifled as it were in the birth, that this petty Pharaoh may enjoy an *excess* of opulence? God commands to increase and replenish the earth; the proposed law would forbid increasing, and confine Britons to their present number, keeping half that number too in wretchedness. The common people of Britain and of Ireland contributed by the taxes they paid, and by the blood they lost, to the success of that war, which brought into our hands the vast unpeopled territories of North America; a country favored by heaven with all the advantages of climate and soil: Germans are now pouring into it, to take possession of it, and fill it with their posterity; and shall Britons and Irelanders, who have a much better right to it, be forbidden a share of it, and, instead of enjoying there the plenty and happiness that might reward their industry, be compelled to remain here in poverty and misery? Considerations such as these persuade me, that the proposed law would be both UNJUST and INHUMAN.

If then it is *unnecessary*, *impracticable*, *impolitic*, and *unjust*, I hope our parliament will never receive the bill, but leave landlords to their own remedy, an abatement of rents, and frugality of living; and leave the liberties of Britons and Irishmen at least as extensive as it found them. I am, Sir, yours, &c.

A FRIEND TO THE POOR.

FOR THE PENNSYLVANIA GAZETTE.

ON SENDING FELONS TO AMERICA.

SIR,

We may all remember the time when our mother country, as a mark of her parental tenderness, emptied her gaols into our habitations, "*for the* BETTER *peopling*," as she expressed it, "*of the Colonies.*" It is certain that no due returns have yet been made for these valuable consignments. We are therefore much in her debt on that account; and, as she is of late clamorous for the payment of all we owe her, and some of our debts are of a kind not so easily discharged, I am for doing however what is in our power. It will show our good-will as to the rest. The felons she planted among us have produced such an amazing increase, that we are now enabled to make ample remittance in the same commodity. And since the wheelbarrow law is not found effectually to reform them, and many of our vessels are idle through her restraints on our trade, why should we not employ those vessels in transporting the felons to Britain?

I was led into this thought by perusing the copy of a petition to Parliament, which fell lately by accident into my hands. It has no date, but I conjecture from some circumstances, that it must have been about the year 1767 or 1768. (It seems, if presented, it had no effect, since the Act passed.) I imagine it may not be unacceptable to your readers, and therefore transcribe it for your paper, viz.—

To the Honorable the Knights, Citizens, and Burgesses of Great Britain, in Parliament assembled,

The PETITION of B. F. Agent for the Province of Pennsylvania;

Most humbly showeth,

That the transporting of felons from England to the plantations in America, is and hath long been a great grievance to the said plantations in general.

That the said felons being landed in America, not only continue their evil practices to the annoyance of his Majesty's good subjects there, but contribute greatly to corrupt the morals of the servants and poorer people among whom they are mixed.

That many of the said felons escape from the servitude to which they were destined, into other colonies, where their condition is not known; and wan-

dering at large from one populous town to another, commit many burglaries, robberies, and murders, to the great terror of the people; and occasioning heavy charges for apprehending and securing such felons, and bringing them to justice.

That your petitioner humbly conceives the easing one part of the British dominions of their felons by burthening another part with the same felons, cannot increase the common happiness of his Majesty's subjects, and that therefore the trouble and expense of transporting them, is upon the whole altogether useless.

That your petitioner, nevertheless, observes with extreme concern in the votes of Friday last, that leave is given to bring in a bill for extending to Scotland, the Act made in the fourth year of the reign of King George the First, whereby the aforesaid grievances are, as he understands, to be greatly increased by allowing Scotland also to transport its felons to America.

Your petitioner therefore humbly prays, in behalf of Pennsylvania, and the other plantations in America, that the House would take the premises into consideration, and in their great wisdom and goodness repeal all acts, and clauses of acts, for transporting of felons; or if this may not at present be done, that they would at least reject the proposed bill for extending the said acts to Scotland; or, if it be thought fit to allow of such extension, that then the said extension may be carried further, and the plantations be also, by an equitable clause in the same bill, permitted to transport their felons to Scotland.

And your petitioner, as in duty bound, shall pray, &c.

The petition, I am informed, was not received by the House, and the Act passed.

On second thoughts, I am of opinion, that besides employing our own vessels, as above proposed, every English ship arriving in our ports with goods for sale, should be obliged to give bond, before she is permitted to trade, engaging that she will carry back to Britain at least one felon for every fifty tons of her burthen. Thus we shall not only discharge sooner our debts, but furnish our old friends with the means of "*better peopling*," and with more expedition, their promising new colony of Botany Bay.

I am yours, &c. A. Z.

VINDICATION AND OFFER FROM CONGRESS TO PARLIAMENT, IN 1775.[1]

Forasmuch as the enemies of America in the Parliament of Great Britain, to render us odious to the nation, and give an ill impression of us in the minds of other European powers, have represented us as unjust and ungrateful in the highest degree;—asserting, on every occasion, that the colonies were settled at the expense of Britain;—that they were, at the expense of the same, protected in their infancy;—that they now ungratefully and unjustly refuse to contribute to their own protection, and the common defence of the nation;—that they aim at independence;—that they intend an abolition of the navigation acts;—and that they are fraudulent in their commercial dealings, and purpose to cheat their creditors in Britain, by avoiding the payment of their just debts.

And as by frequent repetition these groundless assertions and malicious calumnies may, if not contradicted and refuted, obtain farther credit, and be injurious throughout Europe to the reputation and interest of the confederate colonies, it seems proper and necessary to examine them in our own just vindication.

With regard to the first, that the colonies were settled at the expense of Britain, it is a known fact that none of the twelve united colonies were settled, or even discovered, at the expense of England. Henry the VIIth indeed granted a commission to Sebastian Cabot, a Venetian, and his sons, to sail into the western seas for the discovery of new countries; but it was to be "*suis eorum propriis sumptibus et expensis*," at their *own* costs and charges.[2] They discovered, but soon slighted and neglected, these northern territories; which were, after more than a hundred years' dereliction, purchased of the natives, and settled at the charge and by the labor of private men and bodies of men, our ancestors, who came over hither for that purpose. But our adversaries have never been able to produce any record, that ever the parliament or government of England was at the smallest expense on these accounts; on

---

[1] The above paper was drawn up in a Committee of Congress, June 25, 1775, but does not appear on their minutes; a severe Act of Parliament, which arrived about that time, having determined them not to give the sum proposed in it.—It was first printed in the Public Advertiser for July 18, 1777, No. 13,346. B. V.

[2] See the Commission in the Appendix to Pownall's Administration of the Colonies. Edit. 1775.

the contrary, there exists on the journals of parliament, a solemn declaration in 1642, (only twenty-two years after the first settlement of the Massachusetts, when, if such expense had ever been incurred, some of the members must have known and remembered it,) "That these colonies had been planted and established *without any expense to the state.*"[1] New York is the only colony in the founding of which England can pretend to have been at any expense; and that was only the charge of a small armament to take it from the Dutch, who planted it. But to retain this colony at the peace, another at that time full as valuable, planted by private countrymen of *ours*, was given up by the crown to the Dutch in exchange, viz. Surinam, now a wealthy sugar colony in Guiana, and which, but for that cession, might still have remained in our possession. Of late, indeed, Britain has been at some expense in planting two colonies, Georgia[2] and Nova Scotia; but those are not in our confederacy; and the expense she has been at in their name, has chiefly been in grants of sums unnecessarily large, by way of salaries to officers sent from England, and in jobs to friends, whereby dependants might be provided for; those excessive grants not being requisite to the welfare and good government of the colonies, which good government (as experience in many instances of other colonies has taught us) may be much more frugally, and full as effectually, provided for and supported.

With regard to the second assertion, that these colonies were *protected* in their infant state by England,—it is a notorious fact, that in none of the many wars with the Indian natives, sustained by our infant settlements for a century after our first arrival, were ever any troops or forces of any kind sent from England to assist us; nor were any forts built at her expense, to secure our sea-ports from foreign invaders; nor any ships of war sent to protect our trade, till many years after our first settlement, when our commerce became an object of revenue, or of advantage to British merchants; and then it was thought necessary to have a frigate in some of our ports, during peace, to give

[1] "*Veneris, March* 10, 1642.—Whereas the plantations in New England have, by the blessing of the Almighty, had good and prosperous success, *without any public charge to this state;* and are now likely to prove very happy for the propagation of the gospel in those parts, and very beneficial and commodious to this kingdom and nation:—the Commons now assembled in Parliament, &c. &c. &c." [See Governor Hutchinson's History. B. V.]

[2] Georgia has since acceded, July 1775.

weight to the authority of custom-house officers, who were to restrain that commerce for the benefit of England. Our own arms, with our poverty, and the care of a kind providence, were all this time our only protection; while we were neglected by the English government; which either thought us not worth its care, or having no good-will to some of us, on account of our different sentiments in religion and politics, was indifferent what became of us. On the other hand, the colonies have not been wanting to do what they could in every war for annoying the enemies of *Britain*. They formerly assisted her in the conquest of Nova Scotia. In the war before last they took Louisbourg, and put it into her hands. She made her peace with that strong fortress, by restoring it to France, greatly to their detriment. In the last war, it is true, Britain sent a fleet and army, who acted with an equal army of ours, in the reduction of Canada; and perhaps thereby did more for us, than we in the preceding wars had done for her. Let it be remembered, however, that she rejected the plan we formed in the congress at Albany, in 1754, for our own defence, by an union of the colonies; an union she was jealous of, and therefore chose to send her own forces; otherwise her aid, to protect us, was not wanted. And from our first settlement to that time, her military operations in our favor were small, compared with the advantages she drew from her exclusive commerce with us. We are however willing to give full weight to this obligation; and as we are daily growing stronger, and our assistance to her becomes of more importance, we should with pleasure embrace the first opportunity of showing our gratitude by returning the favor in kind. But when Britain values herself as affording us protection, we desire it may be considered that we have followed *her* in all *her* wars, and joined with her at her own expense against all she thought fit to quarrel with. This she has required of us; and would never permit us to keep peace with any power she declared her enemy; though by separate treaties we might well have done it. Under such circumstances, when at her instance we made nations our enemies, whom we might otherwise have retained our friends; we submit it to the common sense of mankind, whether her protection of us in these wars was not our *just due*, and to be claimed of *right*, instead of being received as a *favor?* And whether, when all the parts of an empire exert themselves to the utmost in their common defence, and in annoying the common enemy, it is not as well the *parts* that protect the *whole*, as the *whole* that protects the *parts?* The protection then has been proportionably mutual. And whenever the time shall come, that our abilities may as far exceed hers, as hers

have exceeded ours; we hope we shall be reasonable enough to rest satisfied with her proportionable exertions, and not think we do too much for a part of the empire, when that part does as much as it can for the whole.

The charge against us, *that we refuse to* contribute *to our own protection*, appears from the above to be groundless: but we farther declare it to be absolutely false; for it is well known that we ever held it as our duty to grant aids to the crown upon requisition, towards carrying on its wars; which duty we have cheerfully complied with, to the utmost of our abilities; insomuch that frequent and grateful acknowledgments thereof by king and parliament appear on their records.[1] But as Britain has enjoyed a most gainful monopoly of our commerce; the same, with our maintaining the dignity of the king's representative in each colony, and all our own separate establishments of government, civil and military; has ever hitherto been deemed an equivalent for such aids as might otherwise be expected from us in time of peace—And we hereby declare, that on a reconciliation with Britain, we shall *not only* continue *to grant aids in time of war*, as aforesaid; but, whenever she shall think fit to abolish her monopoly, and give us the same privileges of trade as Scotland received at the union, and allow us a free commerce with all the rest of the world; we shall willingly agree (and we doubt not it will be ratified by our constituents) to *give and pay* into the sinking fund [100,000*l.*] sterling per annum for the term *of* one hundred years; which duly, faithfully, and inviolably applied to that purpose, is demonstrably more than sufficient to extinguish *all her present national* debt; since it will in that time amount, at legal British interest, to more than [230,000,000*l.*][2]

But if Britain does not think fit to accept this proposition, we, in order to remove her groundless jealousies, *that we aim at independence, and an abolition of the navigation act*, (which hath in truth never been our intention) and to avoid all future disputes about the right of making that and other acts for regulating our commerce; do hereby declare ourselves ready and willing to enter into a *covenant with Britain*, that she shall fully possess, enjoy, and exercise that right, for an hundred years to come; the same being *bona fide* used for the

[1] Supposed to allude to certain passages in the journals of the House of Commons on the 4th of April, 1748; 28th January, 1756; 3d February, 1756; 16th and 19th of May, 1757; 1st of June, 1758; 26th and 30th April, 1759; 26th and 31st of March and 28th April, 1760; 9th and 20th January, 1761; 22d and 26th January, 1762; and 14th and 17th March, 1763.

[2] See Dr. Price's *Appeal on the National Debt.*

common benefit; and in case of such agreement, that every assembly be advised by us to confirm it solemnly by laws of their own, which, once made, cannot be repealed without the assent of the crown.

The last charge, *that we are dishonest traders, and aim at defrauding our creditors in Britain*, is sufficiently and authentically refuted by the solemn declarations of the British merchants to parliament, (both at the time of the stamp-act, and in the last session) who bore ample testimony to the general good faith and fair dealing of the Americans, and declared their confidence in our integrity; for which we refer to their petitions on the journals of the House of Commons. And we presume we may safely call on the body of the British tradesmen, who have had experience of both, to say, whether they have not received much more punctual payment from us than they generally have from the members of their own two houses of parliament.

On the whole of the above it appears, that the charge of *ingratitude* towards the mother country, brought with so much confidence against the colonies, is totally without foundation; and that there is much more reason for retorting that charge on Britain, who not only never contributes any aid, nor affords, by an exclusive commerce, any advantages to Saxony, *her* mother country; but no longer since than in the last war, without the least provocation, subsidised the King of Prussia while he ravaged that *mother country*, and carried fire and sword into its capital, the fine city of *Dresden*. An example we hope no provocation will induce us to imitate.

SECTION II.

AMERICAN POLITICS, SUBSEQUENT TO THE INDEPENDENCE OF THE UNITED STATES, IN 1776.

A DIALOGUE BETWEEN BRITAIN, FRANCE, SPAIN, HOLLAND, SAXONY, AND AMERICA.[1]

Britain. Sister of *Spain*, I have a favor to ask of you. My subjects in *America* are disobedient, and I am about to chastise them; I beg you will not furnish them with any arms or ammunition.

Spain. Have you forgotten, then, that when my subjects in the low countries rebelled against me, you not only furnished them with military stores, but joined them with an army and a fleet? I wonder how you can have the impudence to ask such a favor of me, or the folly to expect it!

Britain. You, my dear sister of *France*, will surely not refuse me this favor.

France. Did you not assist my rebel Huguenots with a fleet and an army at *Rochelle?* And have you not lately aided privately and sneakingly my rebel subjects in *Corsica?* And do you not at this instant keep their chief,—pensioned, and ready to head a fresh revolt there, whenever you can find or make an opportunity? Dear sister, you must be a little silly!

Britain. *Honest Holland!* You see it is remembered that I was once your friend, you will therefore be mine on this occasion. I know indeed you are accustomed to smuggle with these rebels of mine. I will wink at that; sell them as much tea as you please to enervate the rascals, since they will not take it of me; but for God's sake don't supply them with any arms.

Holland. 'Tis true you assisted me against *Philip*, my tyrant of *Spain*, but have I not since assisted you against one of your tyrants;[2] and enabled you to expel him? Surely that accompt, as we merchants say, is *balanced*, and I am nothing in your debt. I have indeed some complaints against *you*, for endeavoring to starve me by your *navigation acts;* but being peaceably disposed, I

[1] A political squib, written by Dr. Franklin shortly after his arrival in France, as Commissioner Plenipotentiary from the United States of America.

[2] James II.

do not quarrel with you for that. I shall only go on quietly with my own business. Trade is my profession, 'tis all I have to subsist on. And let me tell you, I should make no scruple, (on the prospect of a good market for that commodity) even to send my ships to Hell and supply the devil with brimstone. For you must know, I can insure in London against the burning of my sails.

America to *Britain*. Why, you old blood-thirsty bully! you who have been everywhere vaunting your own prowess, and defaming the Americans as poltroons! you who have boasted of being able to march over all their bellies with a single regiment! you who by fraud have possessed yourself of their strongest fortress, and all the arms they had stored up in it! you who have a disciplined army in their country intrenched to the teeth, and provided with every thing! Do *you* run about begging all Europe not to supply those poor people with a little powder and shot? Do you mean, then, to fall upon them naked and unarmed, and butcher them in cold blood? Is this your courage? Is this your magnanimity?

Britain. Oh! you wicked—Whig—Presbyterian—Serpent! Have you the impudence to appear before me after all your disobedience? Surrender immediately all your liberties and properties into my hands, or I will cut you to pieces. Was it for this that I planted your country at so great an expense? that I protected you in your infancy, and defended you against all your enemies?

America. I shall not surrender my liberty and property but with my life. It is not true that my country was planted at your expense. Your own records[1]

---

[1] See the Journals of the House of Commons, 1640, viz.

"*Die Veneris, Martii* 10, 1642.

"Whereas the plantations in New England have, by the blessing of Almighty God, had good and prosperous success, *without any public charge to this State*; and are now likely to prove very happy for the Propagation of the Gospel in those parts, and very beneficial and commodious to this kingdom and nation; the Commons now assembled in parliament do, for the better advancement of those plantations, and the encouragement of the planters to proceed in their undertaking, ordain that all merchandises and goods that by any merchant, or other person or persons whatsoever, shall be exported out of this kingdom of England into New England, to be spent, used or employed there; or being of the growth of that *kingdom*, shall be from thence imported hither, or shall be laden or put on board in any ship or vessel for necessaries in passing or returning to and fro; and all and every the owner or owners thereof, shall be freed and discharged of and from paying and yielding any custom, subsidy, taxation, imposition, or other duty for the same, either inward or outward, either in this kingdom or New England, or in any port, haven, creek, or other place whatsoever, until the House of Commons shall

refute that falsehood to your face. Nor did you ever afford me a man or a shilling to defend me against the Indians, the only enemies I had upon my own account. But when you have quarrelled with all Europe, and drawn me with you into all your broils, then you value yourself upon protecting me from the enemies you have made for me. I have no natural cause of difference with Spain, France, or Holland, and yet by turns I have joined with you in wars against them all. You would not suffer me to make or keep a separate peace with any of them, though I might easily have done it, to great advantage. Does your protecting me in those wars give you a right to fleece me? If so, as I fought for you, as well as you for me, it gives me a proportionable right to fleece you. What think you of an American law to make a monopoly of you and your commerce, as you have done by your laws of me and mine? Content yourself with that monopoly if you are wise, and learn justice if you would be respected!

Britain. You impudent B——h! am not I your mother country? Is not that a sufficient title to your respect and obedience?

Saxony. Mother country! Hah, hah, hah! What respect have *you* the front to claim as a mother country? You know that *I* am *your* mother country, and yet you pay me none. Nay, it is but the other day, that you hired[1] ruffians to rob me on the highway,[2] and burn my house![3] For shame! Hide your face and hold your tongue. If you continue this conduct you will make yourself the contempt of Europe!

Britain. O Lord! where are my friends?

France, Spain, Holland, and Saxony altogether. Friends! Believe us you have none, nor ever will have any till you mend your manners. How can we, who are your neighbors, have any regard for you, or expect any equity from you should your power increase, when we see how basely and unjustly you have used both your *own mother and your own children?*

---

take further order therein to the contrary. And all and singular customers, &c. are to observe this order."

[1] Prussians.

[2] They entered and raised contributions in Saxony.

[3] And they burnt the fine suburbs of Dresden, the capital of Saxony.

COMPARISON OF GREAT BRITAIN AND AMERICA AS TO CREDIT, IN 1777.[1]

In borrowing money, a man's credit depends on some or all of the following particulars:—

First. His known conduct respecting former loans, and his punctuality in discharging them.

Secondly. His industry.

Thirdly. His frugality.

Fourthly. The amount and the certainty of his income, and the freedom of his estate from the incumbrances of prior debts.

Fifthly. His well-founded prospects of greater future ability, by the improvement of his estate in value, and by aids from others.

Sixthly. His known prudence in managing his general affairs, and the advantage they will probably receive from the loan which he desires.

Seventhly. His known probity and honest character, manifested by his voluntary discharge of his debts, which he could not have been legally compelled to pay.—The circumstances which give credit to an *individual* ought to, and will have, their weight upon the lenders of money to *public bodies* or nations.—If then we consider and compare Britain and America, in these several particulars upon the question, "To which is it safest to lend money?" we shall find,

1. Respecting *former loans;* that *America,* which borrowed ten millions during the last war for the maintenance of her army of 25,000 men, and other charges, had faithfully discharged and paid that debt, and all her other debts, in 1772.—Whereas *Britain,* during those ten years of peace and profitable commerce, had made little or no reduction of her debt; but on the contrary, from time to time, diminished the hopes of her creditors, by a wanton diversion and misapplication of the sinking fund destined for discharging it.

2. Respecting *industry;* every man (in *America)* is employed; the greater part in cultivating their own lands; the rest in handicrafts, navigation, and commerce. An idle man is a rarity; idleness and inutility are disgraceful.—In *England,* the number of that character is immense; fashion has spread it far

[1] This paper was written, translated, printed, and circulated, while Dr. Franklin was at the court of Paris, for the purpose of inducing foreigners to lend money to America in preference to Great Britain.

and wide; hence the embarrassments of private fortunes, and the daily bankruptcies arising from an universal fondness for appearance and expensive pleasures; and hence, in some degree, the mismanagements of public business; for habits of business and ability in it, are acquired only by practice; and where universal dissipation, and the perpetual pursuit of amusement, are the mode; the youth, educated in it, can rarely afterwards acquire that patient attention and close application to affairs, which are so necessary to a statesman charged with the care of national welfare. *Hence* their frequent errors in policy; and hence the weariness at public councils, and backwardness in going to them; the constant unwillingness to engage in any measure that requires thought and consideration; and the readiness for postponing every new proposition: which postponing is therefore the only part of the business that they come to be expert in, an expertness produced necessarily by so much daily practice. Whereas in *America*, men bred to close employment in their private affairs, attend with ease to those of the public, when engaged in them, and nothing fails through negligence.

3. Respecting *frugality;* the manner of living in *America* is more simple and less expensive than that in England: plain tables, plain clothing, and plain furniture in houses prevail, with few carriages of pleasure; there, an expensive appearance hurts credit, and is avoided: in *England*, it is often assumed to gain credit, and continued to ruin.—Respecting *public* affairs, the difference is still greater. In *England*, the salaries of officers, and emoluments of office, are enormous. The king has a million sterling per annum, and yet cannot maintain his family free of debt: Secretaries of State, Lords of Treasury, Admiralty, &c. have vast appointments: an Auditor of the Exchequer has sixpence in the pound, or a fortieth part of all the public money expended by the nation; so that when a war costs forty millions, one million is paid to him. An Inspector of the Mint, in the last new coinage, received as his fee 65,000*l.* sterling per annum: to all which rewards, no service these gentlemen can render the public is by any means equivalent. All this is paid by the people; who are oppressed by taxes so occasioned; and thereby rendered less able to contribute to the payment of necessary national debts. In *America*, salaries, where indispensable, are extremely low; but much of the public business is done gratis. The honor of serving the public ably and faithfully, is deemed sufficient. *Public spirit* really exists there, and has great effects. In England, it is universally deemed a non-entity, and whoever pretends to it, is laughed at as a fool, or suspected as

a knave. The committees of congress, which form the board of war, the board of treasury, the board of foreign affairs, the naval board, that for accounts, &c. all attend the business of their respective functions, without any salary or emolument whatever; though they spend in it much more of their time than any Lord of Treasury or Admiralty in England can spare, from his amusements.—A British minister lately computed, that the whole expense of the Americans, in their *civil* government, over three millions of people, amounted to but 70,000*l.* sterling; and drew from thence a conclusion, that they ought to be taxed, until their expense was equal in proportion to that which it costs Britain to govern eight millions. He had no idea of a contrary conclusion; that if three millions may be well governed for 70,000*l.* eight millions may be as well governed for three times that sum; and that therefore the expense of his own government should be diminished.—In that corrupted nation, no man is ashamed of being concerned in lucrative *government jobs*, in which the public money is egregiously misapplied and squandered, the treasury pillaged, and more numerous and heavy taxes accumulated; to the great oppression of the people. But the prospect of a greater number of such jobs by a war is an inducement with many to cry out for war upon all occasions, and to oppose every proposition of peace. Hence the constant increase of the national debt, and the absolute improbability of its ever being discharged.

4. Respecting the *amount and certainty of income, and solidity of security:* the *whole* Thirteen States of *America* are engaged for the payment of every debt contracted by the congress; and the debt to be contracted by the present war, is the *only* debt they will have to pay; all, or nearly all the former debts of particular colonies being already discharged. Whereas England will have to pay, not only the enormous debt this war must occasion, but all their vast preceding debt, or the interest of it;—and while America is enriching itself by prizes made upon the British commerce, more than it ever did by any commerce of its own, under the restraints of a British monopoly; Britain is growing poorer by the diminution of its revenues; and of course less able to discharge the present indiscreet increase of its expenses.

5. Respecting prospects of greater future ability, Britain has none such. Her islands are circumscribed by the ocean; and excepting a few parks or forests, she has no new land to cultivate, and cannot therefore extend her improvements. Her numbers, too, instead of increasing from increased subsistence, are continually diminishing from growing luxury, and the increasing difficulties of main-

taining families, which of course discourages early marriages. Thus she will have fewer people to assist in paying her debts, and that diminished number will be poorer.—America, on the contrary, has, besides her lands already cultivated, a vast territory yet to be cultivated; which being cultivated, continually increases in value with the increase of people; and the people, who double themselves by a *natural propagation* every twenty-five years, will double yet faster, by the accession of *strangers*, as long as lands are to be had for new families; so that every twenty years, there will be a double number of inhabitants obliged to discharge the public debts; and those inhabitants being more opulent, may pay their shares with greater ease.

6. Respecting *prudence* in general affairs, and the advantages to be expected from the loan desired; the Americans are cultivators of land; those engaged in fishery and commerce are few, compared with the others. They have ever conducted their several governments with wisdom, avoiding wars, and vain expensive projects; delighting only in their peaceable occupations, which must, considering the extent of their uncultivated territory, find them employment still for ages. Whereas England, ever unquiet, ambitious, avaricious, imprudent, and quarrelsome, is half of the time engaged in war; always at an expense infinitely greater than the advantage to be obtained by it, if successful. Thus they made war against Spain in 1739, for a claim of about 95,000*l.* (scarce a groat for each individual of the nation) and spent forty millions sterling in the war, and the lives of fifty thousand men; and finally made peace without obtaining satisfaction for the sum claimed. Indeed, there is scarce a nation in Europe, against which she has not made war on some frivolous pretext or other; and thereby imprudently accumulated a debt that has brought her on the verge of bankruptcy.—But the most indiscreet of all her wars, is the present against America; with which she might, for ages, have preserved her profitable connexion, only by a just and equitable conduct. She is now acting like a mad shopkeeper, who, by beating those that pass his doors, attempts to make them come in, and be his customers. America cannot submit to such treatment, without being first ruined; and being ruined, her custom will be worth nothing. England, to effect this, is increasing her debt, and irretrievably ruining herself. —America, on the other hand, aims only to establish her liberty, and that freedom of commerce which will be advantageous to all Europe; and by abolishing that monopoly which she labored under, she will profit infinitely more than enough, to repay any debt which she may contract to accomplish it.

7. Respecting *character in the honest payment of debts:* the punctuality with which America has discharged her public debts, was shown under the first head. —And the general good disposition of the people to such punctuality, has been manifested in their faithful payment of *private* debts to England, since the commencement of this war.—There were not wanting some politicians [in America] who proposed *stopping that payment,* until peace should be restored; alleging that in the usual course of commerce, and of the credit given, there was always a debt existing equal to the trade of eighteen months: that the trade amounting to five millions sterling per annum, the debt must be seven millions and a half; that this sum paid to the British merchants, would operate to prevent that distress, intended to be brought upon Britain, by our stoppage of commerce with her: for the merchants receiving this money, and no orders with it for farther supplies, would either lay it out in the public funds; or in employing manufacturers, to accumulate goods, for a future hungry market in America, upon an expected accommodation; by which means the funds would be kept up, and the manufacturers prevented from murmuring. But *against this it was alleged,* that injuries from ministers should not be revenged on merchants; that the credit was in consequence of private contracts, made in confidence of good faith; that those ought to be held sacred, and faithfully complied with; for that whatever public utility might be supposed to arise from a breach of private faith, it was unjust; and would in the end be found unwise; honesty being, in truth, the best policy. On this principle, the proposition was universally rejected; and though the English prosecuted the war with unexampled barbarity, burning our defenceless towns in the midst of winter, and arming savages against us; the debt was punctually paid; and the merchants of London have testified to the parliament, and will testify to all the world, that from their experience in dealing with us, they had, before the war, no apprehension of our unfairness; and that since the war, they have been convinced that their good opinion of us was well founded.—England, on the contrary, an old, corrupt, extravagant, and profligate nation, sees herself deep in debt, which she is in no condition to pay; and yet is madly and dishonestly running deeper, without any possibility of discharging her debt, but by a public bankruptcy.

It appears, therefore, from the general industry, frugality, ability, prudence, and virtue of America, that she is a much safer debtor than Britain; to say nothing of the satisfaction generous minds must have in reflecting, that by loans to America, they are opposing tyranny, and aiding the cause of liberty, which is the cause of all mankind.

A CATECHISM

Relative to the English National Debt.

Question 1. Supposing this debt to be only 195 millions of pounds sterling at present,[1] although it is much more, and that it was all to be counted in shillings, that a man could count at the rate of 100 shillings per minute, for 12 hours each day, till he has counted the whole, how long would he take in doing it?

Answer. One hundred forty-eight years, one hundred nine days, and twenty-two hours.

Q. 2. The whole of this sum being 3,900 millions of shillings, and the coinage standard being sixty-two in the troy pound, what is the whole weight of this sum?

A. Sixty-one millions, seven hundred fifty-two thousand, four hundred and seventy-six troy pounds.

Q. 3. How many ships would carry this weight, suppose 100 tons each?

A. Three hundred and fourteen ships.

Q. 4. How many carts would carry this weight, suppose a ton in each?

A. Thirty-one thousand, four hundred and fifty-two carts.

Q. 5. The breadth of a shilling being one inch, if all these shillings were laid in a straight line, close to one another's edges, how long would the line be that would contain them?

A. Sixty-one thousand, five hundred fifty-two miles, which is 9,572 miles more than twice round the whole circumference of the earth.

Q. 6. Suppose the interest of this debt to be three and a half per cent. per annum, what does the whole annual interest amount to?

A. Six millions, seven hundred and seventy thousand pounds.

Q. 7. How doth government raise this interest annually?

A. By taxing those who lent the principal, and others.

Q. 8. When will government be able to pay the principal?

A. When there is more money in England's treasury than there is in all Europe.

Q. 9. And when will that be?

A. Never.

---

[1] At present (1777) it is said to be at least 230 millions.

OF THE PAPER MONEY OF THE UNITED STATES OF AMERICA.

Much conversation having arisen lately on the subject of this money, and few persons being well acquainted with the nature of it, you may possibly oblige many of your readers, by the following account of it.

When Great Britain commenced the present war upon the colonies, they had neither arms nor ammunition, nor money to purchase them or to pay soldiers. The new government had not immediately the consistence necessary for collecting heavy taxes; nor would taxes that could be raised within the year during peace, have been sufficient for a year's expense in time of war: they therefore printed a quantity of paper bills, each expressing to be of the value of a certain number of Spanish dollars, from one to thirty: with these they paid, clothed, and fed their troops, fitted out ships, and supported the war during five years against one of the most powerful nations of Europe.

The paper thus issued, passed current in all the internal commerce of the United States at par with silver during the first year; supplying the place of the gold and silver formerly current, but which was sent out of the country to purchase arms, &c. or to defray expenses of the army in Canada: but the great number of troops necessary to be kept on foot to defend a coast of near 500 leagues in length, from an enemy who being masters at sea could land troops where they pleased, occasioned such a demand for money, and such frequent additional emissions of new bills, that the quantity became much greater than was wanted for the purposes of commerce; and the commerce being diminished by the war, the surplus quantity of cash was by that means also proportionally augmented.

It has been long and often observed, that when the current money of a country is augmented beyond the occasions for money, as a medium of commerce, its value as money diminishes. Its interest is reduced, and the principal sinks, if some means are not found to take off the surplus quantity. Silver may be carried out of the country that produces it, into other countries, and thereby prevent too great a fall of its value in that country. But when by this means it grows more plentiful in all other countries, nothing prevents its sinking in value. Thus within 300 years, since the discovery of America, and the vast quantities of gold and silver imported from thence, and spread over Europe

and the rest of the world, those metals have sunk in value four-fifths, that is, five ounces of silver will not purchase more labor now than an ounce would have done before that discovery.

Had Spain been able to confine all that treasure within its own territories, silver would probably have been there of no more value by this time than iron, or lead. The exportation has kept its value on a level with its value in other parts of the world. Paper money not being easily received out of the country that makes it, if the quantity becomes excessive, the depreciation is quicker and greater.

Thus the excessive quantities which necessity obliged the Americans to issue for continuing the war, occasioned a depreciation of value, which commencing towards the end of 1776, has gone on augmenting till at the beginning of the present year, 50, 60, and as far as 70 dollars in paper were reckoned not more than equal to one dollar in silver, and the prices of all things rose in proportion.

Before the depreciation commenced, the congress fearing it, stopt for a time the emission of new bills, and resolved to supply their occasions by borrowing. Those who lent them the paper money at that time and until March 1778, fixed their property and prevented its depreciation; the interest being regularly paid by bills of exchange on France, which supports the value of the principal sums lent.

These loans not being sufficient, the congress were forced to print more bills, and depreciation proceeded. The congress would borrow no more on the former conditions of paying the interest in French money at Paris; but great sums were offered and lent them on the terms of being paid the interest, and repaid the principal in the same bills in America.

These loans in some degree lessened, but did not quite take away the necessity of new emissions, so that it at length arrived at the excessive difference between the value of paper and silver, that is above-mentioned.

To put an end to this evil, which destroyed all certainty in commerce, the congress first resolved to diminish the quantity gradually by taxes, which, though nominally vastly great, were really less heavy than they appeared to be, and were readily paid. By these taxes 15 millions of S. dollars, of the 200 millions extant, are to be brought in monthly and burnt. This operation will destroy the whole quantity, to wit, 200,000,000, in about 14 months. Thirty millions have already been so destroyed.

To prevent in the meantime the farther progress of the depreciation and give some kind of determinate value to the paper, it was ordained that for every sum of forty dollars payable by any person as tax, he might discharge himself by paying one dollar in silver. Whether this expedient will produce the effect intended or not, experience and time must discover.

The general effect of the depreciation among the inhabitants of the states has been this, that it has operated as a *gradual tax* upon them, their business has been done and paid for by the paper money, and every man has paid his share of the tax according to the time he retained any of the money in his hands, and to the depreciation within that time. Thus it has proved a tax on money, a kind of property very difficult to be taxed in any other mode; and it has fallen more equally than many other taxes, as those people paid most who being richest had most money passing through their hands.

With regard to the paper money or bills borrowed by the congress, it appears by the above account to be under two different descriptions.

First, the quantity of bills borrowed before the depreciation, the interest of which in silver was to be and is paid. The principal of this sum is considered as equal in value to so many dollars of silver as were borrowed in paper, and will be paid in silver accordingly.

Secondly, the quantities of bills borrowed in different stages of the depreciation down to the present time; these sums are, by a resolution of congress, to be repaid in silver according to the value they were of in silver at the time they were lent; and the interest is to be paid at the same rate. Thus those lenders have their property secured from the loss by depreciation subsequent to the time of their loan.

All the inhabitants are satisfied and pleased with this arrangement, their public debt being by this means reduced to a small sum. And the new paper money which bears interest, and for the payment of which solid funds are provided, is actually in credit equal to real silver.

If any persons living in distant countries have, through their absence from their property in America, suffered loss by not having it timely fixed in the several loans above-mentioned, it is not doubted but that upon an application to congress stating the case, they will meet with redress.

The real money used in the United States, is French, Spanish, Portuguese, and English coins, gold and silver. The most common is Spanish milled dollars, worth five livres five sols tournois.

The nominal money is generally paper, reckoned in pounds, shillings, and pence, of different value in the different states when compared with real money, and that value often changing, so that nothing certain can be said of it. Everywhere the accounts are kept in the nominal pounds, shillings, and pence, the pound containing twenty shillings, and the shilling twelve pence, whatever may be the real value.

Bills of exchange are frequently drawn on Europe, the rate of exchange differing in different states and fluctuating in the same state, occasioned by the greater or less plenty of bills or of demand for others; they are commonly drawn at 30 days' sight.

The usages in buying and selling merchandises, are much the same as in Europe, except that in Virginia the planter carries his tobacco to magazines, where it is inspected by officers, who ascertain its quality and give receipts expressing the quantity. The merchants receive these receipts in payment for goods, and afterwards draw the tobacco out of the magazines for exportation. Weights and measures are uniform in all the states, following the standard of Great Britain.

Money is lent either upon bond, or on mortgage, payable in a year with interest. The interest differs in the different states from five to seven per cent.

Goods are generally imported on 18 months' credit from Europe, sold in the country at 12 months' credit.

Billets or promissory notes payable to the creditor or order, are in use, and demandable when due, as well as accepted bills of exchange: without any days of grace, but by particular favor.

THE RETORT COURTEOUS.

"John Oxly, pawnbroker of Bethnal Green, was indicted for assaulting Jonathan Boldsworth on the highway, putting him in fear, and taking from him one silver watch, value 5*l.* 5*s.* The prisoner pleaded, that having sold the watch to the prosecutor, and being immediately after informed by a person who knew him, that he was not likely to pay for the same, he had only followed him and taken the watch back again. But it appearing on the trial, that, presuming he had not been known when he committed the robbery, he had afterwards sued the prosecutor for the debt, on his note of hand; he was found guilty, *death.*"

Old Bailey Sessions' Paper, 1747.

I chose the above extract from the proceedings of the Old Bailey in the trial of criminals, as a motto or text, on which to amplify in my ensuing discourse. But on second thoughts, having given it forth, I shall, after the example of some other preachers, quit it for the present, and leave to my readers, if I should happen to have any, the task of discovering what relation there may possibly be between my text and my sermon.

During some years past, the British newspapers have been filled with reflections on the inhabitants of America, for *not paying their old debts to English merchants.* And from these papers the same reflections have been translated into foreign prints, and circulated throughout Europe; whereby the American character, respecting honor, probity, and justice in commercial transactions, is made to suffer in the opinion of strangers, which may be attended with pernicious consequences.

At length we are told that the British court has taken up the complaint, and seriously offered it as a reason for refusing to evacuate the frontier posts according to treaty. This gives a kind of authority to the charge, and makes it now more necessary to examine the matter thoroughly; to inquire impartially into the conduct of both nations; take blame to ourselves where we have merited it; and, where it may be fairly done, mitigate the severity of the censures that are so liberally bestowed upon us.

We may begin by observing, that before the war our mercantile character was good. In proof of this (and a stronger proof can hardly be desired) the votes of the House of Commons in 1774-5, have recorded a petition signed by the body of the merchants of London trading to North America, in which they expressly set forth, not only that the trade was profitable to the kingdom, but that the remittances and payments were as punctually and faithfully made, as in any other branch of commerce whatever. These gentlemen were certainly competent judges, and as to that point could have no interest in deceiving the government.

The making of these punctual remittances was however a difficulty. Britain, acting on the selfish and perhaps mistaken principle of receiving nothing from abroad that could be produced at home, would take no articles of our produce that interfered with any of her own; and what did not interfere she loaded with heavy duties. We had no mines of gold or silver. We were therefore obliged to run the world over, in search of something that would be received in England: We sent our provisions and lumber to the West Indies, where ex-

change was made for sugars, cotton, &c. to remit. We brought molasses from thence, distilled it into rum, with which we traded in Africa, and remitted the gold dust to England. We employed ourselves in the fisheries, and sent the fish we caught, together with quantities of wheat, flour, and rice, to Spain and Portugal, from whence the amount was remitted to England in cash or bills of exchange. Great quantities of our rice too, went to Holland, Hamburgh, &c., and the value of that was also sent to Britain. Add to this, that contenting ourselves with paper, all the hard money we could possibly pick up among the foreign West India islands, was continually sent off to Britain, not a ship going thither from America without some chests of those precious metals.

Imagine this great machine of mutually advantageous commerce, going roundly on, in full train; our ports all busy, receiving and selling British manufactures, and equipping ships for the circuitous trade that was finally to procure the necessary remittances; the seas covered with those ships, and with several hundred sail of our fishermen, all working for Britain; and then let us consider what effect the conduct of Britain in 1774 and 1775 and the following years, must naturally have on the future ability of our merchants to make the payments in question.

We will not here enter into the motives of that conduct; they are well enough known, and not to her honor. The first step was shutting up the port of Boston by an act of parliament; the next to prohibit by another the New England fishery. An army and a fleet were sent to enforce these acts. Here was a stop put at once to all the mercantile operations of one of the greatest trading cities of America; the fishing vessels all laid up, and the usual permittances by way of Spain, Portugal, and the Straits, rendered impossible. Yet the cry was now begun against us, *These New England people do not pay their debts!*

The ships of the fleet employed themselves in cruising separately all along the coast. The marine gentry are seldom so well contented with their pay, as not to like a little plunder. They stopped and seized, under slight pretences, the American vessels they met with, belonging to whatever colony. This checked the commerce of them all. Ships loaded with cargoes destined either directly or indirectly to make remittance in England, were not spared. If the differences between the two countries had been then accommodated, these unauthorised plunderers would have been called to account, and many of their exploits must have been found piracy. But what cured all this, set their minds

at ease, made short work, and gave full scope to their piratical disposition, was another act of parliament, forbidding any inquisition into those *past* facts, declaring them all lawful, and all American property to be forfeited, whether on sea or land, and authorising the king's British subjects to take, seize, sink, burn, or destroy, whatever they could find of it. The property suddenly and by surprise, taken from our merchants by the operation of this act, is incomputable. And yet the cry did not diminish, *These Americans don't pay their debts!*

Had the several states of America, on the publication of this act seized all British property in their power, whether consisting of lands in their country, ships in their harbors, or debts in the hands of their merchants, by way of retaliation, it is probable a great part of the world would have deemed such conduct justifiable. They it seems thought otherwise, and it was done only in one or two states, and that under particular circumstances of provocation. And not having thus abolished all demands, the cry subsists that *the Americans should pay their debts!*

General Gage being with his army, (before the declaration of open war) in peaceable possession of Boston, shut its gates, and placed guards all around to prevent its communication with the country. The inhabitants were on the point of starving. The general, though they were evidently at his mercy, fearing that while they had any arms in their hands, frantic desperation might possibly do him some mischief, proposed to them a capitulation, in which he stipulated, that if they would deliver up their arms, they might leave the town with their family and *goods*. In faith of this agreement, they delivered their arms. But when they began to pack up for their departure, they were informed, that by the word *goods*, the general understood only houshold goods, that is, their beds, chairs, and tables, not *merchant goods;* those he was informed they were indebted for to the merchants of England, and he must secure them for the creditors. They were accordingly all seized, to an immense value, *what had been paid for not excepted.* It is to be supposed, though we have never heard of it, that this very honorable general, when he returned home, made a just distribution of those goods, or their value, among the said creditors. But the cry nevertheless continued, *These Boston people do not pay their debts!*

The army having thus ruined Boston, proceeded to different parts of the continent. They got possession of all the capital trading towns. The troops

gorged themselves with plunder. They stopped all the trade of Philadelphia for near a year, of Rhode Island longer, of New York near eight years, of Charlestown in South Carolina and Savannah in Georgia, I forget how long. This continued interruption of their commerce ruined many merchants. The army also burnt to the ground the fine towns of Falmouth and Charlestown near Boston, New London, Fairfield, Norwalk, Esopus, Norfolk the chief trading town in Virginia, besides innumerable tenements and private farm houses. This wanton destruction of property operated doubly to the disabling of our merchants, who were importers from Britain, in making their payments, by the immoderate loss they sustained themselves, and also the loss suffered by their country debtors, who had bought of them the British goods, and who were now rendered unable to pay. The debts to Britain of course remained undischarged, and the clamor continued, *These knavish Americans will not pay us!*

Many of the British debts, particularly in Virginia and the Carolinas, arose from the sales made of negroes in those provinces by the British Guinea merchants. These, with all before in the country, were employed when the war came on, in raising tobaccos and rice for remittance in payment of British debts. An order arrives from England, advised by one of their most celebrated *moralists*, Doctor *Johnson*, in his *Taxation no Tyranny*, to excite these slaves to rise, cut the throats of their purchasers, and resort to the British army, where they should be rewarded with freedom. This was done, and the planters were thus deprived of near 30,000 of their working people. Yet the demand for those sold and unpaid still exists; and the cry continues against the Virginians and Carolinians, that *they do not pay their debts!*

Virginia suffered great loss in this kind of property, by another ingenious and humane British invention. Having the small-pox in their army while in that country, they inoculated some of the negroes they took as prisoners belonging to a number of plantations, and then let them escape, or sent them covered with the pock to mix with and spread the distemper among the others of their color, as well as among the white country people, which occasioned a great mortality of both; and certainly did not contribute to the enabling debtors in making payment. The war too having put a stop to the exportation of tobacco, there was a great accumulation of several years' produce in all the public inspecting warehouses and private stores of the planters. Arnold, Philips, and Cornwallis with

British troops, then entered and over-ran the country, burnt all the inspecting and other stores of tobacco, to the amount of some hundred shiploads; all which might on the return of peace, if it had not been thus wantonly destroyed, have been remitted to British creditors. But *these d—d Virginians, why don't they pay their debts?*

Paper money was in those times our universal currency. But it being the instrument with which we combated our enemies, they resolved to deprive us of its use by depreciating it; and the most effectual means they could contrive was to counterfeit it. The artists they employed performed so well, that immense quantities of these counterfeits which issued from the British government in New York, were circulated among the inhabitants of all the states, before the fraud was detected. This operated considerably in depreciating the whole mass, first, by the vast additional quantity, and next by the uncertainty in distinguishing the true from the false; and the depreciation was a loss to all and the ruin of many. It is true our enemies gained a vast deal of our property by the operation, but it did not go into the hands of our particular creditors, so their demands still subsisted, and we were still abused *for not paying our debts!*

By the seventh article of the treaty of peace, it was solemnly stipulated, that the king's troops in evacuating their posts in the United States, should not carry away with them any negroes. In direct violation of this article, General Carleton, in evacuating New York, carried off all the negroes that were there with his army, to the amount of several hundreds. It is not doubted that he must have had secret orders to justify him in this transaction; but the reason given out was, that as they had quitted their masters and joined the king's troops on the faith of proclamations promising them their liberty, the national honor forbad returning them into slavery. The national honor was, it seemed, pledged to both parts of a contradiction, and its wisdom, since it could not do it with both, chose to keep faith rather with its old black, than its new white friends: a circumstance demonstrating clear as day-light, that in making a present peace, they meditated a future war, and hoped, that though the promised manumission of slaves had not been effectual in the *last*, in the *next* it might be more successful; and that had the negroes been forsaken, no aid could hereafter be expected from those of the color in a future invasion. The treaty however with us was thus broken almost as soon as made, and this by the people who charge us with breaking it by not paying perhaps for some of

the very negroes carried off in defiance of it. Why should England observe treaties, *when these Americans do not pay their debts?*

Unreasonable, however, as this clamor appears in general, I do not pretend by exposing it to justify those debtors who are still able to pay, and refuse it on pretence of injuries suffered by the war. Public injuries can never discharge private obligations. Contracts between merchant and merchant should be sacredly observed, where the ability remains, whatever may be the madness of ministers. It is therefore to be hoped the 4th article of the treaty of peace which stipulates, *that no legal obstruction shall be given to the payment of debts contracted before the war*, will be punctually carried into execution, and that every law in every state which impedes it, may be immediately repealed. Those laws were indeed made with honest intentions, that the half-ruined debtor, not being too suddenly pressed by *some* might have time to arrange and recover his affairs so as to do justice to *all* his creditors. But since the intention in making those acts has been misapprehended, and the acts wilfully misconstrued into a design of defrauding them, and now made a matter of reproach to us, I think it will be right to repeal them all. Individual Americans may be ruined, but the country will save by the operation, since these unthinking merciless creditors must be contented with all that is to be had, instead of all that may be due to them, and the accounts will be settled by insolvency. When all have paid that can pay, I think the remaining British creditors who suffered by the inability of their ruined debtors, have some right to call upon their own government, (which by its bad projects has ruined those debtors) for a compensation. A sum given by parliament for this purpose would be more properly disposed, than in rewarding pretended loyalists, who fomented the war. And the heavier the sum, the more tendency it might have to discourage such destructive projects hereafter.

Among the merchants of Britain, trading formerly to America, there are to my knowledge many considerate and generous men, who never joined in this clamor, and who, on the return of peace, though by the treaty intitled to an immediate suit for their debts, were kindly disposed to give their debtors reasonable time for restoring their circumstances, so as to be able to make payment conveniently. These deserve the most grateful acknowledgments. And indeed it was in their favor, and perhaps for their sakes in favor of all other British creditors, that the law of Pennsylvania, though since much exclaimed

against, was made restraining the recovery of old debts during a certain time. For this restraint was general, respecting domestic as well as British debts, it being thought unfair, in cases where there was not sufficient for all, that the inhabitants, taking advantage of their nearer situation, should swallow the whole, excluding foreign creditors from any share. And in cases where the favorable part of the foreign creditors were disposed to give time, with the views above-mentioned, if others less humane and considerate were allowed to bring immediate suits and ruin the debtor; those views would be defeated. When this law expired in Sept. 1784, a new one was made, continuing for some time longer the restraint with respect to domestic debts, but expressly taking it away where the debt was due from citizens of the state to any of the subjects of Great Britain;[1] which shows clearly the disposition of the assembly, and that the fair intentions above ascribed to them in making the former act, are not merely the imagination of the writer.

Indeed the clamor has been much augmented by numbers joining it who really had no claim on our country. Every debtor in Britain, engaged in whatever trade, when he had no better excuse to give for delay of payment, accused the want of returns from America. And the indignation thus excited against us now appears so general among the English, that one would imagine their nation which is so exact in expecting punctual payment from all the rest of the world, must be at home the model of justice, the very pattern of punctuality. Yet if one were disposed to recriminate, it would not be difficult to find sufficient matter in several parts of their conduct. But this I forbear. The two separate nations are now at peace, and there can be no use in mutual provocations to fresh enmity. If I have shown clearly that the present inability of many American merchants to discharge their debts contracted before the war, is not so much their fault, as the fault of the crediting nation,

---

[1] Extract from an Act of General Assembly of Pennsylvania intituled, "An Act for directing the mode of recovering debts contracted before the first day of January, in the year of our Lord one thousand seven hundred and seventy-seven."

Exception in favor of British Creditors.

"Sect. 7. And provided also, and be it further enacted by the authority aforesaid, that this Act, nor any thing therein contained, shall not extend, or be construed to extend to any debt or debts which were due before the fourth day of July one thousand seven hundred and seventy-six by any of the citizens of the State, to any of the subjects of Great Britain."

who by making an unjust war on them, obstructing their commerce, plundering and devastating their country were the cause of that inability, I have answered the purpose of writing this paper. How far the refusal of the British court to execute the treaty in delivering up the frontier posts, may on account of that deficiency of payment be justifiable, is cheerfully submitted to the world's impartial judgment.

END OF PART I.

PART II.

GENERAL POLITICS AND COMMERCE.

OBSERVATIONS CONCERNING THE INCREASE OF MANKIND, PEOPLING OF COUNTRIES, &c.

Written in Pennsylvania, 1751.

1. TABLES of the proportion of marriages to births, of deaths to births, of marriages to the number of inhabitants, &c. formed on observations made upon the bills of mortality, christenings, &c. of populous cities, will not suit countries; nor will tables formed and observations made on full settled old countries, as Europe, suit new countries, as America.

2. For people increase in proportion to the number of marriages, and that is greater in proportion to the ease and convenience of supporting a family. When families can be easily supported, more persons marry, and earlier in life.

3. In cities, where all trades, occupations, and offices are full, many delay marrying till they can see how to bear the charges of a family; which charges are greater in cities, as luxury is more common; many live single during life, and continue servants to families, journeymen to trades, &c. Hence cities do not, by natural generation, supply themselves with inhabitants; the deaths are more than the births.

4. In countries full settled, the case must be nearly the same, all lands being occupied and improved to the height; those who cannot get land, must labor for others, that have it; when laborers are plenty, their wages will be low; by low wages a family is supported with difficulty; this difficulty deters many from marriage, who therefore long continue servants and single. Only, as the cities take supplies of people from the country, and thereby make a little more room in the country, marriage is a little more encouraged there, and the births exceed the deaths.

5. Great part of Europe is fully settled with husbandmen, manufacturers, &c. and therefore cannot now much increase in people. America is chiefly occupied by Indians, who subsist mostly by hunting. But as the hunter, of all men, requires the greatest quantity of land from whence to draw his subsistence, (the

husbandman subsisting on much less, the gardener on still less, and the manufacturer requiring least of all) the Europeans found America as fully settled, as it well could be by hunters; yet these, having large tracts, were easily prevailed on to part with portions of territory to the new comers, who did not much interfere with the natives in hunting, and furnished them with many things they wanted.

6. Land being thus plenty in America, and so cheap, as that a laboring man, that understands husbandry, can, in a short time, save money enough to purchase a piece of new land, sufficient for a plantation, whereon he may subsist a family; such are not afraid to marry: for if they even look far enough forward to consider how their children, when grown up, are to be provided for, they see, that more land is to be had at rates equally easy, all circumstances considered.

7. Hence marriages in America are more general, and more generally early, than in Europe. And if it is reckoned there, that there is but one marriage *per annum* among 100 persons, perhaps we may here reckon two; and if in Europe, they have but four births to a marriage, (many of their marriages being late) we may here reckon eight, of which, if one half grow up, and our marriages are made, reckoning one with another, at twenty years of age, our people must at least be doubled every twenty years.

8. But notwithstanding this increase, so vast is the territory of North America, that it will require many ages to settle it fully, and till it is fully settled, labor will never be cheap here, where no man continues long a laborer for others, but gets a plantation of his own; no man continues long a journeyman to a trade, but goes among those new settlers, and sets up for himself, &c. Hence labor is no cheaper now, in Pennsylvania, than it was thirty years ago, though so many thousand laboring people have been imported from Germany and Ireland.

9. The danger, therefore, of these colonies interfering with their mother country in trades, that depend on labor, manufactures, &c. is too remote to require the attention of Great Britain.

10. But, in proportion to the increase of the colonies, a vast demand is growing for British manufactures; a glorious market, wholly in the power of Britain, in which foreigners cannot interfere, which will increase, in a short time, even beyond her power of supplying, though her whole trade should be to her colonies. * * * * * * * *

12. It is an ill-grounded opinion, that, by the labor of slaves, America may possibly vie in cheapness of manufactures with Britain. The labor of slaves can never be so cheap here, as the labor of working men is in Britain. Any one may compute it. Interest of money is in the colonies from 6 to 10 per cent. Slaves, one with another, cost 30*l.* sterling per head. Reckon then the interest of the first purchase of a slave, the insurance or risk on his life, his clothing and diet, expenses in his sickness and loss of time, loss by his neglect of business, (neglect is natural to the man, who is not to be benefited by his own care or diligence) expense of a driver to keep him at work, and his pilfering from time to time, almost every slave being, from the nature of slavery, a thief, and compare the whole amount with the wages of a manufacturer of iron or wool in England, you will see, that labor is much cheaper there, than it ever can be by negroes here. Why then will Americans purchase slaves? Because slaves may be kept as long as a man pleases, or has occasion for their labor, while hired men are continually leaving their master (often in the midst of his business) and setting up for themselves. § 8.

13. As the increase of people depends on the encouragement of marriages, the following things must diminish a nation, viz. 1. The being conquered; for the conquerors will engross as many offices, and exact as much tribute or profit on the labor of the conquered, as will maintain them in their new establishment; and his diminishing the subsistence of the natives discourages their marriages, and so gradually diminishes them, while the foreigners increase. 2. Loss of territory. Thus the Britons, being driven into Wales, and crowded together in a barren country, insufficient to support such great numbers, diminished, till the people bore a proportion to the produce; while the Saxons increased on their abandoned lands, till the island became full of English. And, were the English now driven into Wales by some foreign nation, there would, in a few years, be no more Englishmen in Britain, than there are now people in Wales. 3. Loss of trade. Manufactures, exported, draw subsistence from foreign countries for numbers, who are thereby enabled to marry and raise families. If the nation be deprived of any branch of trade, and no new employment is found for the people occupied in that branch, it will soon be deprived of so many people. 4. Loss of food. Suppose a nation has a fishery, which not only employs great numbers, but makes the food and subsistence of the people cheaper: if another nation becomes master of the seas, and prevents the fishery, the people will diminish in proportion as the loss of employ and

dearness of provision makes it more difficult to subsist a family. 5. Bad government and insecure property. People not only leave such a country, and, settling abroad, incorporate with other nations, lose their native language, and become foreigners; but the industry of those that remain being discouraged, the quantity of subsistence in the country is lessened, and the support of a family becomes more difficult. So heavy taxes tend to diminish a people. 6. The introduction of slaves. The negroes brought into the English sugar islands, have greatly diminished the whites there: the poor are by this means deprived of employment, while a few families acquire vast estates, which they spend on foreign luxuries; and, educating their children in the habits of those luxuries, the same income is needed for the support of one, that might have maintained one hundred. The whites, who have slaves, not laboring, are enfeebled, and therefore not so generally prolific; the slaves being worked too hard, and ill fed, their constitutions are broken, and the deaths among them are more than the births; so that a continual supply is needed from Africa. The northern colonies, having few slaves, increase in whites. Slaves also pejorate the families that use them; the white children become proud, disgusted with labor, and, being educated in idleness, are rendered unfit to get a living by industry.

14. Hence the prince, that acquires new territory, if he finds it vacant, or removes the natives to give his own people room;—the legislator, that makes effectual laws for promoting trade, increasing employment, improving land by more or better tillage, providing more food by fisheries, securing property, &c.—and the man that invents new trades, arts or manufactures, or new improvements in husbandry, may be properly called *fathers of their nation*, as they are the cause of the generation of multitudes, by the encouragement they afford to marriage.

15. As to privileges granted to the married, (such as the *jus trium liberorum* among the Romans) they may hasten the filling of a country, that has been thinned by war or pestilence, or that has otherwise vacant territory, but cannot increase a people beyond the means provided for their subsistence.

16. Foreign luxuries, and needless manufactures, imported and used in a nation, do, by the same reasoning, increase the people of the nation that furnishes them, and diminish the people of the nation that uses them. Laws therefore that prevent such importations, and, on the contrary, promote the exportation of manufactures to be consumed in foreign countries, may be called (with

respect to the people that make them) *generative laws*, as, by increasing subsistence, they encourage marriage. Such laws likewise strengthen a country doubly, by increasing its own people, and diminishing its neighbors.

17. Some European nations prudently refuse to consume the manufactures of East India:—they should likewise forbid them to their colonies; for the gain to the merchant is not to be compared with the loss, by this means, of people to the nation.

18. Home luxury in the great increases the nation's manufacturers employed by it, who are many, and only tends to diminish the families that indulge in it, who are few. The greater the common fashionable expense of any rank of people, the more cautious they are of marriage. Therefore luxury should never be suffered to become common.

19. The great increase of offspring in particular families is not always owing to greater fecundity of nature, but sometimes to examples of industry in the heads, and industrious education, by which the children are enabled better to provide for themselves, and their marrying early is encouraged from the prospect of good subsistence.

20. If there be a sect, therefore, in our nation, that regard frugality and industry as religious duties, and educate their children therein, more than others commonly do, such sect must consequently increase more by natural generation than any other sect in Britain.

21. The importation of foreigners into a country that has as many inhabitants as the present employments and provisions for subsistence will bear, will be in the end no increase of people, unless the new-comers have more industry and frugality than the natives, and then they will provide more subsistence, and increase in the country; but they will gradually eat the natives out. Nor is it necessary to bring in foreigners to fill up any occasional vacancy in a country; for such vacancy (if the laws are good, § 14, 16) will soon be filled by natural generation. Who can now find the vacancy made in Sweden, France, or other warlike nations, by the plague of heroism 40 years ago; in France, by the expulsion of the protestants; in England, by the settlement of her colonies; or in Guinea, by a hundred years' exportation of slaves, that has blackened half America? The thinness of the inhabitants in Spain is owing to national pride, and idleness, and other causes, rather than to the expulsion of the Moors, or to the making of new settlements.

22. There is, in short, no bound to the prolific nature of plants or animals, but what is made by their crowding and interfering with each other's means of subsistence. Was the face of the earth vacant of other plants, it might be gradually sowed and overspread with one kind only, as, for instance, with fennel: and were it empty of other inhabitants, it might, in a few ages, be replenished from one nation only, as, for instance, with Englishmen. Thus there are supposed to be now upwards of one million of English souls in North America (though it is thought scarce 80,000 have been brought over sea) and yet perhaps there is not one the fewer in Britain, but rather many more, on account of the employment the colonies afford to manufacturers at home. This million doubling, suppose but once in 25 years, will, in another century, be more than the people of England, and the greatest number of Englishmen will be on this side the water. What an accession of power to the British empire by sea as well as land! What increase of trade and navigation! What numbers of ships and seamen! We have been here but little more than a hundred years, and yet the force of our privateers in the late war, united, was greater, both in men and guns, than that of the whole British navy in Queen Elizabeth's time. How important an affair then to Britain is the present treaty[1] for settling the bounds between her colonies and the French? and how careful should she be to secure room enough, since on the room depends so much the increase of her people?

23. In fine, a nation well regulated is like a polypus:[2] take away a limb, its place is soon supplied: cut it in two, and each deficient part shall speedily grow out of the part remaining. Thus, if you have room and subsistence enough, as you may, by dividing, make ten polypuses out of one, you may, of one, make ten nations, equally populous and powerful: or, rather, increase the nation tenfold in numbers and strength. * * * * *

Remarks on some of the foregoing Observations, showing particularly the Effect which manners have on Population.

FROM RICHARD JACKSON,[3] ESQ. OF LONDON, TO BENJAMIN FRANKLIN, ESQ. AT PHILADELPHIA.

DEAR SIR,

It is now near three years since I received your excellent *Observations on the Increase of Mankind, &c.* in which you have with so much sagacity and accu-

[1] In 1751. [2] A water insect, well known to naturalists.

[3] An English barrister of eminence—and an intimate friend of Dr. Franklin.

racy shown in what manner, and by what causes, that principal means of political grandeur is best promoted; and have so well supported those just inferences you have occasionally drawn, concerning the general state of our American colonies, and the views and conduct of some of the inhabitants of Great Britain.

You have abundantly proved, that natural fecundity is hardly to be considered, because the *vis generandi*, as far as we know, is unlimited; and because experience shows, that the numbers of nations are altogether governed by collateral causes, and among these none of so much force as quantity of subsistence, whether arising from climate, soil, improvement of tillage, trade, fisheries, secure property, conquest of new countries, or other favorable circumstances.

As I perfectly concurred with you in your sentiments on these heads, I have been very desirous of building somewhat on the foundation you have there laid; and was induced, by your hints in the twenty-first section, to trouble you with some thoughts on the influence manners have always had, and are always likely to have, on the numbers of people, and their political prosperity in general.

The end of every individual is its own private good. The rules it observes, in the pursuits of this good, are a system of propositions, almost every one founded in authority; that is, deriving their weight from the credit given to one or more persons, and not from demonstration.

And this, in the most important as well as the other affairs of life, is the case even of the wisest and philosophical part of the human species; and that it should be so is the less strange, when we consider, that it is perhaps impossible to prove, that *being*, or life itself, has any other value than what is set on it by authority.

A confirmation of this may be derived from the observation, that, in every country in the universe, happiness is sought upon a different plan; and, even in the same country, we see it placed by different ages, professions, and ranks of men, in the attainment of enjoyments utterly unlike.

These propositions, as well as others framed upon them, become habitual by degrees, and, as they govern the determination of the will, I call them *moral habits*.

There is another set of habits, that have the direction of the members of the body, that I call therefore *mechanical habits*. These compose what we

commonly call *the arts*, which are more or less liberal or mechanical, as they more or less partake of assistance from the operations of the mind.

The *cumulus* of the moral habits of each individual, is the manners of that individual; the *cumulus* of the manners of individuals makes up the manners of a nation.

The happiness of individuals is evidently the ultimate end of political society; and political welfare, or the strength, splendor, and opulence of the state, have been always admitted, both by political writers, and the valuable part of mankind in general, to conduce to this end, and are therefore desirable.

The causes that advance or obstruct any one of these three objects, are external or internal. The latter may be divided into physical, civil, and personal; under which last head I comprehend the moral and mechanical habits of mankind. The physical causes are principally climate, soil, and number of subjects; the civil, are government and laws; and political welfare is always in a ratio composed of the force of these particular causes; a multitude of external causes, and all these internal ones, not only control and qualify, but are constantly acting on, and thereby insensibly, as well as sensibly, altering one another, both for the better and the worse, and this not excepting the climate itself.

The powerful efficacy of manners in increasing a people is manifest from the instance you mention, the Quakers; among them industry and frugality multiply and extend the use of the necessaries of life: to manners of a like kind are owing the populousness of Holland, Switzerland, China, Japan, and most parts of Indostan, &c., in every one of which, the force of extent of territory and fertility of soil is multiplied, or their want compensated, by industry and frugality.

Neither nature nor art have contributed much to the production of subsistence in Switzerland, yet we see frugality preserves and even increases families that live on their fortunes, and which, in England, we call the gentry; and the observation we cannot but make in the southern part of this kingdom, that those families, including all superior ones, are gradually becoming extinct, affords the clearest proof that luxury (that is, a greater expense of subsistence than in prudence a man ought to consume) is as destructive as proportionable want of it; but in Scotland, as in Switzerland, the gentry, though one with another they have not one-fourth of the income, increase in number.

And here I cannot help remarking, by the bye, how well founded your dis-

tinction is between the increase of mankind in old and new settled countries in general, and more particularly in the case of families of condition. In America, where the expenses are more confined to necessaries, and those necessaries are cheap, it is common to see above one hundred persons descended from one living old man. In England, it frequently happens, where a man has seven, eight, or more children, there has not been a descendant in the next generation, occasioned by the difficulties the number of children has brought on the family, in a luxurious dear country, and which have prevented their marrying.

That this is more owing to luxury than mere want, appears from what I have said of Scotland, and more plainly from parts of England remote from London, in most of which the necessaries of life are nearly as dear, in some dearer, than London, yet the people of all ranks marry and breed up children.

Again: among the lower ranks of life, none produce so few children as servants. This is, in some measure, to be attributed to their situation, which hinders marriage, but is also to be attributed to their luxury and corruption of manners, which are greater than among any other set of people in England, and are the consequence of a nearer view of the lives and persons of a superior rank, than any inferior rank, without a proper education, ought to have.

The quantity of subsistence in England has unquestionably become greater for many ages; and yet, if the inhabitants are more numerous, they certainly are not so in proportion to our improvement of the means of support. I am apt to think there are few parts of this kingdom that have not been at some former time more populous than at present. I have several cogent reasons for thinking so of great part of the counties I am most intimately acquainted with; but, as they were probably not all most populous at the same time, and as some of our towns are visibly and vastly grown in bulk, I dare not suppose, as judicious men have done, that England is less peopled than heretofore.

The growth of our towns is the effect of a change of manners, and improvement of arts, common to all Europe; and though it is not imagined that it has lessened the country growth of necessaries, it has evidently, by introducing a greater consumption of them, (an infallible consequence of a nation's dwelling in towns) counteracted the effects of our prodigious advances in the arts.

But however frugality may supply the place, or prodigality counteract the effects, of the natural or acquired subsistence of a country, industry is, beyond

doubt, a more efficacious cause of plenty than any natural advantage of extent or fertility. I have mentioned instances of frugality and industry united with extent and fertility. In Spain and Asia Minor, we see frugality joined to extent and fertility, without industry; in Ireland we once saw the same; Scotland had then none of them but frugality. The change in these two countries is obvious to every one, and it is owing to industry not yet very widely diffused in either. The effects of industry and frugality in England, are surprising; both the rent and the value of the inheritance of land, depend on them greatly more than on nature; and this, though there is no considerable difference in the prices of our markets. Land of equal goodness lets for double the rent of other land lying in the same county, and there are many years' purchase difference between different counties, where rents are equally well paid and secure.

Thus manners operate upon the number of inhabitants; but of their silent effects upon a civil constitution, history, and even our own experience, yield us abundance of proofs, though they are not uncommonly attributed to external causes: their support of a government against external force is so great, that it is a common maxim among the advocates of liberty, that no free government was ever dissolved, or overcome, before the manners of its subjects were corrupted.

The superiority of Greece over Persia was singly owing to their difference of manners; and that, though all natural advantages were on the side of the latter, to which I might add the civil ones; for though the greatest of all civil advantages, liberty, was on the side of Greece, yet that added no political strength to her, but in proportion as it operated on her manners, and, when they were corrupted, the restoration of their liberty by the Romans, overturned the remains of their power.

Whether the manners of ancient Rome were at any period calculated to promote the happiness of individuals, it is not my design to examine; but that their manners, and the effects of those manners on their government and public conduct, founded, enlarged, and supported, and afterwards overthrew their empire, is beyond all doubt. One of the effects of their conquest, furnishes us with a strong proof, how prevalent manners are even beyond quantity of subsistence; for, when the custom of bestowing on the citizens of Rome corn enough to support themselves and families was become established, and

Egypt and Sicily produced the grain that fed the inhabitants of Italy, this became less populous every day, and the *jus trium liberorum* was but an expedient that could not balance the want of industry and frugality.

But corruption of manners did not only thin the inhabitants of the Roman empire, it rendered the remainder incapable of defence long before its fall, perhaps before the dissolution of the republic; so that without standing disciplined armies, composed of men whose moral habits principally, and mechanical habits secondarily, made them different from the body of the people, the Roman empire had been a prey to the barbarians many ages before it was.

By the mechanical habits of the soldiery, I mean their discipline and the art of war; and that this is but a secondary quality appears from the inequality that has in all ages been between raw though well disciplined armies, and veterans; and more from the irresistible force a single moral habit, religion, has conferred on troops, frequently neither disciplined nor experienced.

The military manners of the *noblesse* in France, compose the chief force of that kingdom; and the enterprising manners and restless dispositions of the inhabitants of Canada, have enabled a handful of men to harass our populous, and, generally, less martial colonies; yet neither are of the value they seem at first, because overbalanced by the defect they occasion of other habits that would produce more eligible political good: and military manners in a people are not necessary in an age and country where such manners may be occasionally formed and preserved among men enough to defend the state; and such a country is Great Britain; where, though the lower class of people are by no means of a military cast, yet they make better soldiers than even the *noblesse* of France.

The inhabitants of this country, a few ages back, were to the populous and rich provinces of France what Canada is now to the British colonies. It is true, there was less disproportion between their natural strength; but I mean, that the riches of France were a real weakness, opposed to the military manners founded upon poverty and a rugged disposition, compared to the character of the English; but it must be remembered, that at this time the manners of a people were not distinct from that of their soldiery; for the use of standing armies has deprived a military people of the advantages they before had over others; and though it has been often said, that civil wars give power, because they render all men soldiers, I believe this has only been found true in internal wars following

civil wars, and not in external ones; for now, in foreign wars, a small army, with ample means to support it, is of greater force than one more numerous, with less. This last fact has often happened between France and Germany.

The means of supporting armies, and consequently the power of exerting external strength, are best found in the industry and frugality of the body of a people living under a government and laws that encouraged commerce: for commerce is at this day almost the only stimulus that forces every one to contribute a share of labor for the public benefit.

But such is the human frame, and the world is so constituted, that it is a hard matter to possess one's self of a benefit, without laying one's self open to a loss on some other side; the improvements of manners of one sort often deprave those of another: thus we see industry and frugality under the influence of commerce, which I call a commercial spirit, tend to destroy, as well as support, the government it florishes under.

Commerce perfects the arts, but more the mechanical than the liberal, and this for an obvious reason; it softens and enervates the manners. Steady virtue and unbending integrity are seldom to be found where a spirit of commerce pervades every thing; yet the perfection of commerce is, that every thing should have its price. We every day see its progress, both to our benefit and detriment here. Things, that *boni mores* forbid to be set to sale, are become its objects, and there are few things indeed *extra commercium*. The legislative power itself has been *in commercio*, and church livings are seldom given without consideration, even by sincere Christians, and, for consideration, not seldom to very unworthy persons. The rudeness of ancient military times, and the fury of more modern enthusiastic ones, are worn off; even the spirit of forensic contention is astonishingly diminished, all marks of manners softening; but luxury and corruption have taken their places, and seem the inseparable companions of commerce and the arts.

I cannot help observing, however, that this is much more the case in extensive countries, especially at their metropolis, than in other places. It is an old observation of politicians, and frequently made by historians, that small states always best preserve their manners. Whether this happens from the greater room there is for attention in the legislature, or from the less room there is for ambition and avarice, it is a strong argument, among others, against an incorporating union of the colonies in America, or even a federal one, that may tend to the future reducing them under one government.

Their power, while disunited, is less, but their liberty, as well as manners, is more secure; and, considering the little danger of any conquest to be made upon them, I had rather they should suffer something through disunion, than see them under a general administration less equitable than that concerted at Albany.[1]

I take it, the inhabitants of Pennsylvania are both frugal and industrious beyond those of any province in America. If luxury should spread, it cannot be extirpated by laws. We are told by Plutarch, that Plato used to say, *It was a hard thing to make laws for the Cyrenians, a people abounding in plenty and opulence.*

But from what I set out with, it is evident, if I be not mistaken, that education only can stem the torrent, and, without checking either true industry or frugality, prevent the sordid frugality and laziness of the old Irish, and many of the modern Scotch, (I mean the inhabitants of that country, those who leave it for another being generally industrious) or the industry, mixed with luxury, of this capital, from getting ground, and, by rendering ancient manners familiar, produce a reconciliation between disinterestedness and commerce; a thing we often see, but almost always in men of a liberal education.

To conclude: when we would form a people, soil and climate may be found at least sufficiently good; inhabitants may be encouraged to settle, and even supported for a while; a good government and laws may be framed, and even arts may be established, or their produce imported: but many necessary moral habits are hardly ever found among those who voluntarily offer themselves in times of quiet at home, to people new colonies; besides that the moral as well as mechanical habits, adapted to a mother-country, are frequently not so to the new settled one, and to external events, many of which are always unforeseen. Hence it is we have seen such fruitless attempts to settle colonies, at an immense public and private expense, by several of the powers of Europe: and it is particularly observable, that none of the English colonies became any way considerable, till the necessary manners were born and grew up in the country, excepting those to which singular circumstances at home forced manners fit for the forming a new state. I am, sir, &c. R. JACKSON.

[1] See an account of this plan in MEMOIRS OF THE LIFE, Part II. p. 105. 4to. Edit. and the plan itself,—page 1 of this volume.

ON THE PRICE OF CORN, AND MANAGEMENT OF THE POOR.[1]

TO MESSIEURS THE PUBLIC.

I am one of that class of people that feeds you all, and at present is abused by you all;—in short, I am a *farmer*.

By your newspapers we are told, that God had sent a very short harvest to some other countries of Europe. I thought this might be in favor of Old England; and that now we should get a good price for our grain, which would bring millions among us, and make us flow in money: that, to be sure, is scarce enough.

But the wisdom of government forbad the exportation.[2]

Well, says I, then we must be content with the market-price at home.

No, say my lords the mob, you sha'n't have that. Bring your corn to market if you dare;—we'll sell it for you, for less money, or take it for nothing.

Being thus attacked by both ends *of the constitution*, the head and the tail *of government*, what am I to do?

Must I keep my corn in the barn to feed, and increase the breed of rats?—be it so;—they cannot be less thankful than those I have been used to feed.

---

[1] The following extracts of a letter, signed *Columella*, and addressed to the editors of *the Repository for select Papers on Agriculture, Arts, and Manufactures*, (see Vol. I. p. 352,) will again serve the purpose of preparing those who read it, for entering upon this paper.

"GENTLEMEN,

"There is now publishing in France a periodical work, called *Ephemerides du Citoyen*, in which several points interesting to those concerned in agriculture, are from time to time discussed by some able hands. In looking over one of the volumes of this work a few days ago, I found a little piece written by one of our countrymen, and which our vigilant neighbors had taken from *the London Chronicle* in 1766. The author is a gentleman well known to every man of letters in Europe; and perhaps there is none, in this age, to whom mankind in general are more indebted.

"That this piece may not be lost to our own country, I beg you will give it a place in your Repository: it was written in favor of the farmers, when they suffered so much abuse in our public papers, and were also plundered by the mob in many places."

The principles on which this piece is grounded, are given more at large in the *Political Fragments*, art. 2. B. V.

[2] It is not necessary to repeat in what degree Dr. Franklin respected the ministers, to whom he alludes.—The embargo upon corn was but a single measure: which, it is enough to say, a host of politicians thought well advised, but ill defended.—Of the great and honorable services of the Earl of Chatham to his country, Dr. Franklin has borne the amplest testimony. B. V.

Are we farmers the only people to be grudged the profits of our honest labor? —And why? One of the late scribblers against us, gives a bill of fare of the provisions at my daughter's wedding, and proclaims to all the world, that we had the insolence to eat beef and pudding!—Has he not read the precept in the good book, *Thou shalt not muzzle the mouth of the ox that treadeth out the corn;* or does he think us less worthy of good living than our oxen?

O, but the manufacturers! the manufacturers! they are to be favored, and they must have bread at a cheap rate!

Hark ye, Mr. Oaf;—the farmers live splendidly, you say. And pray, would you have them hoard the money they get? Their fine clothes and furniture, do they make them themselves or for one another, and so keep the money among them? Or, do they employ these your darling manufacturers, and so scatter it again all over the nation?

The wool would produce me a better price, if it were suffered to go to foreign markets; but that, Messieurs the Public, your laws will not permit. It must be kept all at home, that our *dear* manufacturers may have it the cheaper. And then, having yourselves thus lessened our encouragement for raising sheep, you curse us for the scarcity of mutton!

I have heard my grandfather say, that the farmers submitted to the prohibition on the exportation of wool, being made to expect and believe that when the manufacturer bought his wool cheaper, they should also have their cloth cheaper. But the deuce a bit. It has been growing dearer and dearer from that day to this. How so? Why, truly, the cloth is exported; and that keeps up the price.

Now, if it be a good principle, that the exportation of a commodity is to be restrained, that so our people at home may have it the cheaper; stick to that principle, and go thorough stitch with it. Prohibit the exportation of your cloth, your leather, and shoes, your iron ware, and your manufactures of all sorts, to make them all cheaper at home. And cheap enough they will be, I will warrant you—till people leave off making them.

Some folks seem to think they ought never to be easy till England becomes another Lubberland, where it is fancied the streets are paved with penny rolls, the houses tiled with pancakes, and chickens, ready roasted, cry, Come eat me.

I say, when you are sure you have got a good principle, stick to it, and carry it thorough. I hear it is said, that though it was *necessary and right* for the

m——y to advise a prohibition of the exportation of corn, yet it was *contrary to law;* and also, that though it was *contrary to law* for the mob to obstruct waggons, yet was *necessary and right*. Just the same thing to a tittle. Now they tell me, an act of indemnity ought to pass in favor of the m——y, to secure them from the consequences of having acted illegally. If so, pass another in favor of the mob. Others say, some of the mob ought to be hanged, by way of example. If so,—but I say no more than I have said before, *when you are sure that you have got a good principle, go through with it.*

You say, poor laborers cannot afford to buy bread at a high price, unless they had higher wages. Possibly. But how shall we farmers be able to afford our laborers higher wages, if you will not allow us to get, when we might have it, a higher price for our corn?

By all that I can learn, we should at least have had a guinea a quarter more, if the exportation had been allowed. And this money England would have got from foreigners.

But, it seems, we farmers must take so much less, that the poor may have it so much cheaper.

This operates then as a tax for the maintenance of the poor. A very good thing, you will say. But I ask, why a partial tax? Why laid on us farmers only? If it be a good thing, pray, Messieurs the Public, take your share of it, by indemnifying us a little out of your public treasury. In doing a good thing, there is both honor and pleasure;—you are welcome to your share of both.

For my own part, I am not so well satisfied of the goodness of this thing. I am for doing good to the poor, but I differ in opinion about the means. I think the best way of doing good to the poor, is not making them easy *in* poverty, but leading or driving them *out* of it. In my youth I travelled much, and I observed in different countries, that the more public provisionswere made for the poor, the less they provided for themselves, and of course became poorer. And, on the contrary, the less was done for them, the more they did for themselves, and became richer. There is no country in the world where so many provisions are established for them; so many hospitals to receive them when they are sick or lame, founded and maintained by voluntary charities; so many almshouses for the aged of both sexes; together with a solemn general law, made by the rich, to subject their estates to a heavy tax for the support of the poor. Under all these obligations, are our poor modest, humble, and thankful? and do they use their best endeavors to maintain themselves, and lighten our

shoulders of this burthen? On the contrary, I affirm that there is no country in the world in which the poor are more idle, dissolute, drunken, and insolent. The day you passed that act, you took away from before their eyes the greatest of all inducements to industry, frugality, and sobriety, by giving them a dependence on somewhat else than a careful accumulation during youth and health, for support in age or sickness. In short, you offered a premium for the encouragement of idleness, and you should not now wonder that it has had its effect in the increase of poverty. Repeal that law, and you will soon see a change in their manners—*Saint Monday* and *Saint Tuesday* will soon cease to be holidays. SIX *days shalt thou labor*, though one of the old commandments long treated as out of date, will again be looked upon as a respectable precept; industry will increase, and with it plenty among the lower people; their circumstances will mend, and more will be done for their happiness by inuring them to provide for themselves, than could be done by dividing all your estates among them.

Excuse me, Messieurs the Public, if upon this *interesting* subject I put you to the trouble of reading a little of *my* nonsense; I am sure I have lately read a great deal of *your's*; and therefore from you (at least from those of you who are writers) I deserve a little indulgence. I am yours, &c. ARATOR.[1]

---

[1] The late Mr. Owen Ruffhead being some time ago employed in preparing a *Digest of our Poor Laws*, communicated a copy of it to Dr. Franklin, for his advice. Dr. Franklin recommended that provision should be made therein, for the printing on a sheet of paper and dispersing, in each parish in the kingdom, annual accounts of every disbursement and receipt of its officers. It is obvious to remark how greatly this must tend to check both the officers and the poor, and to inform and interest the parishioners with respect to parish concerns. Some of the American colonies actually practise this measure with a success which might justify its adoption here. [England.]

Later improvements, however, in the English poor laws, have not only been meditated, but attempted. In particular, in 1773, an act of parliament was proposed, in order to invite the poor to set apart money for the purchase of annuities, in all parishes and townships managing the poor's-rate, that could admit of, and would formally consent to the regulation. Some of the particulars of this scheme were as follows. The annuities, which to accommodate the poor were payable quarterly, were in no case to exceed 20*l.* and no principal purchase-money was to be received of less amount than 5*l.* at a time; the parties might choose any age for the purchase between 15 and 75, but they could not receive the annuity before 50 if men, and 35 if women, the annuity in the mean time increasing in proportion as they had waited; the annuities also could not knowingly be granted to any but those entitled to legal parish settlements, nor for any other lives than those of the grantees; though they were saleable, provided the first refusal of them was offered to the grantors. The proper officers of the parish or township (who were constituted the grantors) in order to effect

these purposes, were to be erected into a corporation with a seal; the grants (which were framed according to a prescribed and cheap form, and protected from frauds) were to be in several ways authenticated and preserved; the annuities were to be taken up in some parliamentary fund, after the rate of 3 per cent. interest, negociable at the bank of England; and the accounts, after being properly kept and signed, were to be annually audited and recorded with the justices at the quarter-sessions. The relief to the poor in case of delay of payment was summary and almost instant; but in return, the corporation might receive gifts and legacies, and have the benefit of all neglected annuities, to the easing of the poor's-rate; besides other advantages given them by the calculations, particularly that arising from a low standard of interest, which necessarily rendered the terms of the annuity in proportion dearer to the poor. It was thought that domestic use and economy were concerned, in thus rescuing somewhat from profligacy and unhealthy debauchery, in applying the surplus of health and of strength to the relief of the penury and infirmities of age, and in promoting good habits; yet without depriving the state on the whole of effectual labor, or leaving it incumbered with the charge of individuals, who might assist themselves. But this scheme, which was proposed by Baron Maseres, regulated and superintended as to the calculations by Dr. Price, and supported by Sir George Savile and Mr. Dowdeswell, only passed the commons: it was rejected by the lords; chiefly because the landed interest there was alarmed at the poor's-rate being made the security for the annuities, in case of deficiency in the funds.

However, the burthen of the poor's-rate was still felt too considerable not to demand inquiry; and an act soon passed, calling for a general abstract of the returns made by the overseers of the poor. It appeared in consequence, that there were

	Totals raised by the poor's-rate, from Easter 1775, to Easter 1776.	Of which there was expended on the poor alone,
In England	1,679,585*l.*	1,523,164*l.*
And in Wales	40,732*l.*	33,641*l.*
	1,720,317*l.*	1,556,805*l.*

The remainder of the sum raised was applied to county uses, except about 26,000*l.* which seems not to have been brought into the year's account. Nearly one-twentieth of the enormous sum expended on the poor, was for the single article of rent; and the litigations concerning settlements and the removal of paupers made another article of nearly half the same amount. In Davenant we find an estimate of the poor's-rate, made towards the latter end of Charles the Second's reign, by a reasonable medium, as he states, of several years:

The gross sums are,	For England	631,609*l.*
	And for Wales	33,753*l.*
		665,362*l.*

So that while the poor's-rate of Wales has remained in a manner stationary for this period, that of England does not fall much short of being trebled.

Since the year 1776, no farther public measures seem to have been taken respecting the regulation of the poor. *(Written in* 1779.*)*

(See, on the above subjects, the proposed act of parliament, with the annexed tables and instructions, printed for Eyre and Strahan; also the Abstract of the Returns of the Poor's-rate, printed for ditto; Dr. Price on Payments, 3d. edit. p. 115; and Whitworth's Davenant, vol. i. p. 39.) B. V.

ON SMUGGLING, AND ITS VARIOUS SPECIES.[1]

SIR,

THERE are many people that would be thought, and even think themselves, *honest* men, who fail nevertheless in particular points of honesty; deviating from that character sometimes by the prevalence of mode or custom, and sometimes through mere inattention; so that their *honesty* is partial only, and not *general* or universal. Thus one who would scorn to over-reach you in a bargain, shall make no scruple of tricking you a little now and then at cards; another that plays with the utmost fairness, shall with great freedom cheat you in the sale of a horse. But there is no kind of dishonesty, into which otherwise good people more easily and frequently fall, than that of defrauding government of its revenues by smuggling when they have an opportunity, or encouraging smugglers by buying their goods.

I fell into these reflections the other day, on hearing two gentlemen of reputation discoursing about a small estate, which one of them was inclined to sell, and the other to buy; when the seller, in recommending the place, remarked, that its situation was very advantageous on this account, that being on the sea-coast in a smuggling country, one had frequent opportunities of buying many of the expensive articles used in a family, (such as tea, coffee, chocolate, brandy, wines, cambrics, Brussels laces, French silks, and all kinds of India goods,) 20, 30, and in some articles 50 *per cent.* cheaper than they could be had in the more interior parts, of traders that paid duty. The other *honest* gentleman allowed this to be an advantage, but insisted that the seller, in the advanced price he demanded on that account, rated the advantage much above its value. And neither of them seemed to think dealing with smugglers, a practice that an *honest* man (provided he got his goods cheap) had the least reason to be ashamed of.

At a time when the load of our public debt, and the heavy expense of maintaining our fleets and armies to be ready for our defence on occasion, makes it necessary not only to continue old taxes, but often to look out for new ones; perhaps it may not be unuseful to state this matter in a light that few seem to have considered it in.

---

[1] This letter is extracted from the *London Chronicle* for November 24, 1767; and is addressed to the printer of that newspaper.

The people of Great Britain, under the happy constitution of this country, have a privilege few other countries enjoy, that of choosing the third branch of the legislature; which branch has alone the power of regulating their taxes. Now whenever the government finds it necessary for the common benefit, advantage, and safety of the nation, for the security of our liberties, property, religion, and every thing that is dear to us, that certain sums shall be yearly raised by taxes, duties, &c. and paid into the public treasury, thence to be dispensed by government for those purposes, ought not every *honest man* freely and willingly to pay his just proportion of this necessary expense? Can he possibly preserve a right to that character, if by any fraud, stratagem, or contrivance, he avoids that payment in whole or in part?

What should we think of a companion, who having supped with his friends at a tavern, and partaken equally of the joys of the evening with the rest of us, would nevertheless contrive by some artifice to shift his share of the reckoning upon others, in order to go off scot-free? If a man who practised this, would, when detected, be deemed and called a scoundrel, what ought he to be called, who can enjoy all the inestimable benefits of public society, and yet by smuggling, or dealing with smugglers, contrive to evade paying his just share of the expense, as settled by his own representatives in parliament; and wrongfully throw it upon his honester and perhaps much poorer neighbors? He will perhaps be ready to tell me, that he does not wrong his neighbors; he scorns the imputation; he only cheats the king a little, who is very able to bear it. This however is a mistake. The public treasure is the treasure of the nation, to be applied to national purposes. And when a duty is laid for a particular public and necessary purpose, if through smuggling that duty falls short of raising the sum required, and other duties must therefore be laid to make up the deficiency; all the additional sum laid by the new duties and paid by other people, though it should amount to no more than a halfpenny or a farthing per head, is so much actually picked out of the pockets of those other people by the smugglers and their abettors and encouragers. Are they then any better or other than pickpockets? and what mean, low, rascally pickpockets must those be, that can pick pockets for halfpence and for farthings?

I would not however be supposed to allow in what I have just said, that cheating the king is a less offence against honesty, than cheating the public. The king and the public in this case are different names for the same thing;

but if we consider the king distinctly, it will not lessen the crime: it is no justification of a robbery, that the person robbed was rich and able to bear it. The king has as much right to justice as the meanest of his subjects; and as he is truly the common *father* of his people, those that rob him fall under the scripture woe, pronounced against the son *that robbeth his father, and saith it is no sin.*

Mean as this practice is, do we not daily see people of character and fortune engaged in it for trifling advantages to themselves? Is any lady ashamed to request of a gentleman of her acquaintance, that when he returns from abroad, he would smuggle her home a piece of silk or lace from France or Flanders? Is any gentleman ashamed to undertake and execute the commission? Not in the least. They will talk of it freely, even before others whose pockets they are thus contriving to pick by this piece of knavery.

Among other branches of the revenue, that of the post-office is, by a late law, appropriated to the discharge of our public debt, to defray the expenses of the state. None but members of parliament, and a few public officers, have now a right to avoid, by a frank, the payment of postage. When any letter not written by them or on their business, is franked by any of them, it is a hurt to the revenue; an injury which they must now take the pains to conceal by writing the whole superscription themselves. And yet such is our insensibility to justice in this particular, that nothing is more common than to see, even in a reputable company, a *very honest* gentleman or lady declare, his or her intention to cheat the nation of three-pence by a frank; and without blushing, apply to one of the very legislators themselves, with a modest request, that he would be pleased to become an accomplice in the crime, and assist in the perpetration.

There are those who by these practices take a great deal in a year out of the public purse, and put the money into their own private pockets. If passing through a room where public treasure is deposited, a man takes the opportunity of clandestinely pocketing and carrying off a guinea, is he not truly and properly a thief? And if another evades paying into the treasury a guinea he ought to pay in, and applies it to his own use, when he knows it belongs to the public as much as that which has been paid in, what difference is there in the nature of the crime, or the baseness of committing it?

Some laws make the receiving of stolen goods equally penal with stealing, and upon this principle, that if there were no receivers there would be few thieves. Our proverb too, says truly, that *the receiver is as bad as the thief.*

By the same reasoning, as there would be few smugglers, if there were none who knowingly encouraged them by buying their goods, we may say that the encouragers of smuggling are as bad as the smugglers; and that as smugglers are a kind of thieves, both equally deserve the punishments of thievery.

In this view of wronging the revenue, what must we think of those who can evade paying for their wheels and their plate, in defiance of law and justice, and yet declaim against corruption and peculation, as if their own hands and hearts were pure and unsullied? The Americans offend us grievously, when, contrary to our laws, they smuggle goods into their own country; and yet they had no hand in making those laws. I do not however pretend from thence to justify them: but I think the offence much greater in those who either directly or indirectly have been concerned in making the very laws they break. And when I hear them exclaiming against the Americans, and for every little infringement of the acts of trade, or obstruction given by a petty mob to an officer of our customs in that country, calling for vengeance against the whole people as REBELS and TRAITORS, I cannot help thinking there are still those in the world who can *see a mote in their brother's eye, while they do not discern a beam in their own;* and that the old saying is as true now as ever it was, *one man may better steal a horse, than another look over the hedge.* B. F.

OBSERVATIONS ON WAR.

By the original law of nations, war and extirpation were the punishment of injury. Humanising by degrees, it admitted slavery instead of death: a farther step was, the exchange of prisoners instead of slavery; another, to respect more the property of private persons under conquest, and be content with acquired dominion. Why should not this law of nations go on improving? Ages have intervened between its several steps; but as knowledge of late increases rapidly, why should not those steps be quickened? Why should it not be agreed to, as the future law of nations, that in any war hereafter the following description of men should be undisturbed, have the protection of both sides, and be permitted to follow their employments in security? viz.

1. Cultivators of the earth, because they labor for the subsistence of mankind.
2. Fishermen, for the same reason.
3. Merchants and traders in unarmed ships, who accommodate different

nations by communicating and exchanging the necessaries and conveniencies of life.

4. Artists and mechanics, inhabiting and working in open towns.

It is hardly necessary to add, that the hospitals of enemies should be unmolested—they ought to be assisted. It is for the interest of humanity in general, that the occasions of war, and the inducements to it, should be diminished. If rapine be abolished, one of the encouragements to war is taken away; and peace therefore more likely to continue and be lasting.

The practice of robbing merchants on the high seas—a remnant of the ancient piracy—though it may be accidentally beneficial to particular persons, is far from being profitable to all engaged in it, or to the nation that authorises it. In the beginning of a war some rich ships are surprised and taken. This encourages the first adventurers to fit out more armed vessels; and many others to do the same. But the enemy at the same time become more careful; arm their merchant ships better, and render them not so easy to be taken: they go also more under the protection of convoys. Thus, while the privateers to take them are multiplied, the vessels subject to be taken, and the chances of profit, are diminished; so that many cruises are made wherein the expenses overgo the gains; and, as is the case in other lotteries, though particulars have got prizes, the mass of adventurers are losers, the whole expense of fitting out all the privateers during a war, being much greater than the whole amount of goods taken.

Then there is the national loss of all the labor of so many men during the time they have been employed in robbing; who besides spend what they get in riot, drunkenness, and debauchery; lose their habits of industry; are rarely fit for any sober business after a peace, and serve only to increase the number of highwaymen and housebreakers. Even the undertakers who have been fortunate, are, by sudden wealth, led into expensive living, the habit of which continues when the means of supporting it cease, and finally ruins them; a just punishment for their having wantonly and unfeelingly ruined many honest, innocent traders and their families, whose substance was employed in serving the common interest of mankind.

ON THE LABORING POOR.

TO THE EDITOR OF * * * * * APRIL, 1768.

SIR,

I have met with much invective in the papers for these two years past against the hard-heartedness of the rich, and much complaint of the great oppressions suffered in this country by the laboring poor. Will you admit a word or two on the other side of the question? I do not propose to be an advocate for oppression or oppressors. But when I see that the poor are, by such writings, exasperated against the rich, and excited to insurrections, by which much mischief is done, and some forfeit their lives, I could wish the true state of things were better understood, the poor not made by these busy writers more uneasy and unhappy than their situation subjects them to be, and the nation not brought into disrepute among foreigners, by public groundless accusations of ourselves, as if the rich in England had no compassion for the poor, and Englishmen wanted common humanity.

In justice, then, to this country, give me leave to remark, that the condition of the poor here is, by far, the best in Europe; for that, except in England and her American colonies, there is not in any country of the known world, not even in Scotland or Ireland, a provision by law to enforce a support of the poor. Everywhere else necessity reduces to beggary. This law was not made by the poor. The legislators were men of fortune. By that act they voluntarily subjected their own estates, and the estates of all others, to the payment of a tax, for the maintenance of the poor, incumbering those estates with a kind of rent charge for that purpose, whereby the poor are vested with an inheritance, as it were, in all the estates of the rich. I wish they were benefited by this generous provision, in any degree equal to the good intention with which it was made, and is continued. But I fear the giving mankind a dependance on any thing for support, in age or sickness, besides industry and frugality during youth and health, tends to flatter our natural indolence, to encourage idleness and prodigality, and thereby to promote and increase poverty, the very evil it was intended to cure; thus multiplying beggars instead of diminishing them.

Besides this tax, which the rich in England have subjected themselves to in behalf of the poor, amounting in some places to five or six shillings in the pound, of the annual income, they have, by donations and subscriptions, erected

numerous schools in various parts of the kingdom for educating, gratis, the children of the poor, in reading and writing; and in many of those schools the children are also fed and clothed. They have erected hospitals at an immense expense, for the reception and cure of the sick, the lame, the wounded, and the insane poor, for lying-in women, and deserted children. They are also continually contributing towards making up losses occasioned by fire, by storms, or by floods, and to relieve the poor in severe seasons of frost, in times of scarcity, &c. in which benevolent and charitable contributions no nation exceeds us.—Surely, there is some gratitude due for so many instances of goodness.

Add to this all the laws made to discourage foreign manufactures, by laying heavy duties on them, or totally prohibiting them, whereby the rich are obliged to pay much higher prices for what they wear and consume, than if the trade was open. These are so many laws for the support of our laboring poor, made by the rich, and continued at their expense: all the difference of price between our own and foreign commodities, being so much given by our rich to our poor; who would indeed be enabled by it to get by degrees above poverty, if they did not, as too generally they do, consider every increase of wages, only as something that enables them to drink more and work less; so that their distress in sickness, age, or times of scarcity, continues to be the same as if such laws had never been made in their favor.

Much malignant censure have some writers bestowed upon the rich for their luxury and expensive living, while the poor are starving, &c.; not considering that what the rich expend, the laboring poor receive in payment for their labor. It may seem a paradox if I should assert, that our laboring poor do in every year receive *the whole revenue of the nation;* I mean not only the public revenue, but also the revenue or clear income of all private estates, or a sum equivalent to the whole.—In support of this position I reason thus: the rich do not work for one another. Their habitations, furniture, clothing, carriages, food, ornaments, and every thing, in short, that they or their families use and consume, is the work or produce of the laboring poor, who are and must be continually paid for their labor in producing the same. In these payments the revenues of private estates are expended, for most people live up to their incomes. In clothing and provision for troops, in arms, ammunition, ships, tents, carriages, &c. &c. (every particular the produce of labor), much of the public revenue is expended. The pay of officers, civil and military, and of the private soldiers and sailors, requires the rest; and they spend that also in paying for what is pro-

duced by the laboring poor. I allow that some estates may increase by the owners spending less than their income; but then I conceive that other estates do at the same time diminish, by the owners spending more than their income, so that when the enriched want to buy more land, they easily find lands in the hands of the impoverished, whose necessities oblige them to sell; and thus this difference is equalled. I allow also that part of the expense of the rich is in foreign produce or manufactures, for producing which the laboring poor of other nations must be paid; but then I say, we must first pay our own laboring poor for an equal quantity of our manufactures or produce to exchange for those foreign productions, or we must pay for them in money, which money not being the natural produce of our country, must first be purchased from abroad, by sending out its value in the produce or manufactures of this country, for which manufactures our laboring poor are to be paid. And indeed if we did not export more than we import, we could have no money at all. I allow farther, that there are middle men, who make a profit, and even get estates, by purchasing the labor of the poor, and selling it at advanced prices to the rich; but then they cannot enjoy that profit, or the incomes of estates, but by spending them in employing and paying our laboring poor, in some shape or other, for the products of industry.—Even beggars, pensioners, hospitals, and all that are supported by charity, spend their incomes in the same manner. So that finally, as I said at first, *our laboring poor receive annually the whole of the clear revenues of the nation*, and from us they can have no more.

If it be said that their wages are too low, and that they ought to be better paid for their labor, I heartily wish that any means could be fallen upon to do it consistent with their interest and happiness; but as the cheapness of other things is owing to the plenty of those things, so the cheapness of labor is in most cases owing to the multitude of laborers, and to their underworking one another in order to obtain employment. How is this to be remedied? A law might be made to raise their wages; but if our manufactures are too dear, they will not vend abroad, and all that part of employment will fail, unless by fighting and conquering, we compel other nations to buy our goods whether they will or no, which some have been mad enough at times to propose. Among ourselves, unless we give our working people less employment, how can we for what they do pay them higher than we do? Out of what fund is the additional price of labor to be paid, when all our present incomes are, as it were, mortgaged to them? Should they get higher wages,

would that make them less poor, if in consequence they worked fewer days of the week proportionably? I have said a law might be made to raise their wages; but I doubt much whether it could be executed to any purpose, unless another law, now indeed almost obsolete, could at the same time be revived and enforced; a law, I mean, that many have often heard and repeated, but few have ever duly considered. SIX *days shalt thou labor*. This is as positive a part of the commandment, as that which says, *the* SEVENTH *day thou shalt rest;* but we remember well to observe the indulgent part, and never think of the other. *St. Monday* is generally as duly kept by our working people as *Sunday;* the only difference is, that instead of employing their time cheaply at church, they are wasting it expensively at the ale-house.

I am, Sir, yours, &c.

MEDIUS.

PLAN FOR BENEFITING DISTANT UNPROVIDED COUNTRIES.[1]

By Messrs. Franklin and Dalrymple.

Aug. 29, 1771.

The country called in the maps *New Zealand*, has been discovered by the *Endeavour*, to be two islands, together as large as *Great Britain:* these islands, named *Acpy-nomawée* and *Tovy-poennammoo*, are inhabited by a brave and generous race, who are destitute of *corn*, *fowls*, and *all quadrupeds*, except *dogs*.

These circumstances being mentioned lately in a company of men of liberal sentiments, it was observed that it seemed *incumbent* on such a country as *this*, [England] to communicate to *all others* the conveniencies of life which we enjoy.

Dr. Franklin, whose life has ever been directed to promote the true interest of society, said, "he would with all his heart *subscribe* to a voyage intended to communicate *in general* those benefits which we enjoy, to countries destitute of them in the remote parts of the globe." This proposition being warmly adopted by the rest of the company, Mr. Dalrymple, then present, was induced to offer to undertake the command on such an expedition.

On mature reflection this scheme appears the more honorable to the national

---

[1] These proposals were printed upon a sheet of paper, and distributed. The parts written by Dr. Franklin and Mr. Dalrymple are easily distinguished.

character of any which can be conceived, as it is grounded on the noblest principle of benevolence. Good intentions are often frustrated by letting them remain indigested; on this consideration Mr. Dalrymple was induced to put the outlines on paper, which are now published, that by an early communication there may be a better opportunity of collecting all the hints which can conduce to execute effectually the benevolent purpose of the expedition, in case it should meet with general approbation.

On this scheme being shown to Dr. Franklin, he communicated his sentiments by way of introduction, to the following effect.

"Britain is said to have produced originally nothing but *sloes*. What vast advantages have been communicated to her by the fruits, seeds, roots, herbage, animals, and arts of other countries! We are by their means become a wealthy and a mighty nation, abounding in all good things. Does not some *duty* hence arise from us towards other countries still remaining in our former state?

"Britain is now the first maritime power in the world. Her ships are innumerable, capable by their form, size, and strength, of sailing all seas. Our seamen are equally bold, skilful and hardy; dexterous in exploring the remotest regions, and ready to engage in voyages to unknown countries, though attended with the greatest dangers. The inhabitants of those countries, our *fellow men*, have canoes only; not knowing iron, they cannot build ships: they have little astronomy, and no knowledge of the compass to guide them: they cannot therefore come to us, or obtain any of our advantages. From these circumstances, does not some duty seem to arise from us to them? Does not Providence by these distinguishing favors seem to call on us to do something ourselves for the common interest of humanity?

"Those who think it their duty to ask bread and other blessings daily from heaven, would they not think it equally a duty to communicate of those blessings when they have received them; and show their gratitude to their great Benefactor by the only means in their power, promoting the happiness of his other children?

"*Ceres* is said to have made a journey through many countries to teach the use of corn, and the art of raising it. For this single benefit the grateful nations deified her. How much more may Englishmen deserve such honor, by communicating the knowledge and use not of corn only, but of all the other enjoyments earth can produce, and which they are now in possession of. *Communiter bona profundere, Deûm est.*

"Many voyages have been undertaken with views of profit or of plunder, or to gratify resentment; to procure some advantage to ourselves, or do some mischief to others: but a voyage is now proposed to visit a distant people on the other side the globe; not to cheat them, not to rob them, not to seize their lands, or enslave their persons; but merely to do them good, and make them, as far as in our power lies, to live as comfortably as ourselves.

"It seems a laudable wish that all the nations of the earth were connected by a knowledge of each other, and a mutual exchange of benefits: but a commercial nation particularly should wish for a general civilization of mankind, since trade is always carried on to much greater extent with people who have the arts and conveniencies of life, than it can be with naked savages. We may therefore hope in this undertaking to be of some service to our country, as well as to those poor people who, however distant from us, are in truth related to us, and whose interests do, in some degree, concern every one who can say *Homo sum*," &c.

Scheme of a voyage by subscription, to convey the conveniencies of life, as fowls, hogs, goats, cattle, corn, iron, &c. to those remote regions which are destitute of them, and to bring from thence such productions as can be cultivated in this kingdom to the advantage of society, in a ship under the command of Alexander Dalrymple.

Catt or bark, from the coal trade, of 350 tons, estimated at about - -			£2000
Extra expenses, stores, boats, &c. - - - - - - - - - - - - - -			3000
			5000
To be manned with 60 men at			
	4	per man per month	
	240		
	12		
	2880	per annum	
	3		
Wages and provisions	8640	for three years - - - - - - - - - - - -	8640
			13640
Cargo included, supposed - - - - - - - - - - - - - - - -			15000

The expenses of this expedition are calculated for *three* years; but the greatest part of the amount of wages will not be wanted till the ship returns, and a great part of the expense of provisions will be saved by what is obtained in the course of the voyage by barter or otherwise, though it is proper to make provision for contingencies.

* * * * * * * * * * * * *

ON THE INSTITUTION IN HOLLAND TO PREVENT POVERTY.

"To Mr. Masères, "*Craven Street, June 17th*, 1772.

"SIR,

"I thank you for the pamphlet proposing to establish Life Annuities in parishes, &c.: I think it an excellent one. In compliance with your wish page 25, 26, I send it back with a few marginal notes (perhaps of no great importance) made in reading it, requesting it may be returned to me.

"In page 118 of Dr. Price's Book on Annuities, second edition, you will find mention made of an institution in Holland. He had that information from me. Those houses are handsome neat buildings with very comfortable apartments; some form the sides of a square, with grass plats and gravel walks, flowers, &c., and some have little separate gardens behind each apartment. Those for men are called *Oude Mannen Hayzen*, for women *Oude Vrouwen Hayzen*. I think the different kinds sometimes make different sides of the same square. There is a chapel for prayers, a common kitchen, and a common hall, in which they dine together. Two persons such as best like one another, and choose so to associate, are generally lodged in one apartment, though in separate beds, that they may be at hand to assist each other in case of sudden illness in the night, and otherwise be mutually helpful. The directors have also a room to meet in, who form rules for the government of the house, hear complaints, and rectify what is amiss. Gentlemen are directors of the *Oude Mannen Haus*, ladies of the *Oude Vrouwen Haus*. A committee of two are chosen every year, who visit often, see the rules observed, and take care of the management. At the end of the year, these are thanked off, and as an honorable memorial of their service, their names, with the year they served, are added to the gold-letter list on the walls of the room. All the furniture is neat and convenient, the beds and rooms kept clean and sweet by the servants of the house, and the people appear to live happily,

"These institutions seem calculated to *prevent* poverty, which is rather a better thing than *relieving* it: for it keeps always *in the public eye* a state of comfort and repose, with freedom from care in old age, held forth as an encouragement to so much industry and frugality in youth as may at least serve to raise the required sum (suppose 50*l.*) that is to intitle a man or woman at 50 to a retreat in these houses. And in acquiring this sum, habits may be acquired that produce such affluence before this age arrives as to make the retreat unnecessary, and so never claimed. Hence if 50*l.* would (as by your table) intitle a man at 50 years of age to an annuity of 19*l.* 3*s.* 6½*d.*, I suppose that in such a house, entertainment and accommodation to a much greater value might be afforded him, because the right to live there is not transferable, and therefore every unclaimed right is an advantage to the house, while annuities would probably be all claimed. Then it seems to me that the prospect of a distant annuity will not be so influencing on the minds of young people as the constant view of the comfort enjoyed in those houses, in comparison of which, even the payment and *receipt* of the annuities are *private transactions.*

"I write this in hopes you will, after consideration, favor me with your opinion whether (in addition to your plan, which will still have all its advantages for smaller sums) one or more such houses in every county would not probably be of great use in still further promoting industry and frugality among the lower people, and of course lessening the enormous weight of the poor tax?

"I enclose a little piece I wrote in America to encourage and strengthen those important virtues, of which I beg your acceptance, and am, with great esteem,

"Sir, your most obedient humble servant,

"B. FRANKLIN."

POSITIONS TO BE EXAMINED.

1. All food or subsistence for mankind arise from the earth or waters.

2. Necessaries of life that are not foods, and all other conveniencies, have their values estimated by the proportion of food consumed while we are employed in procuring them.

3. A small people with a large territory may subsist on the productions of nature, with no other labor than that of gathering the vegetables and catching the animals.

4. A large people with a small territory finds these insufficient, and to subsist,

must labor the earth, to make it produce greater quantities of vegetable food, suitable for the nourishment of men, and of the animals they intend to eat.

5. From this labor arises a *great increase* of vegetable and animal food, and of materials for clothing, as flax, wool, silk, &c. The superfluity of these is wealth. With this wealth we pay for the labor employed in building our houses, cities, &c. which are therefore only subsistence thus metamorphosed.

6. *Manufactures* are only *another shape* into which so much provisions and subsistence are turned, as were *equal in value* to the manufactures produced. This appears from hence, that the manufacturer does not, in fact, obtain from the employer for his labor, *more* than a mere subsistence, including raiment, fuel, and shelter; all which derive their value from the provisions consumed in procuring them.

7. The produce of the earth, thus converted into manufactures, may be more easily carried to distant markets than before such conversion.

8. *Fair commerce* is, where equal values are exchanged for equal, the expense of transport included. Thus, if it costs A in *England* as much labor and charge to raise a bushel of wheat, as it costs B in *France* to produce four gallons of wine, then are four gallons of wine the fair exchange for a bushel of wheat, A and B meeting at half distance with their commodities to make the exchange. The advantage of this fair commerce is, that each party increases the number of his enjoyments, having, instead of wheat alone, or wine alone, the use of both wheat and wine.

9. Where the labor and expense of producing both commodities are known to both parties, bargains will generally be fair and equal. Where they are known to one party only, bargains will often be unequal, knowledge taking its advantage of ignorance.

10. Thus he that carries 1000 bushels of wheat abroad to sell, may not probably obtain so great a profit thereon as if he had first turned the wheat into manufactures, by subsisting therewith the workmen while producing those manufactures: since there are many expediting and facilitating methods of working, not generally known; and strangers to the manufactures, though they know pretty well the expense of raising wheat, are unacquainted with those short methods of working, and thence being apt to suppose more labor employed in the manufactures than there really is, are more easily imposed on in their value, and induced to allow more for them than they are honestly worth.

11. Thus the advantage of having manufactures in a country does not con-

sist, as is commonly supposed, in their highly advancing the value of rough materials, of which they are formed; since, though six-pennyworth of flax may be worth 20*s.* when worked into lace, yet the very cause of its being worth 20*s.* is, that besides the flax, it has cost 19*s.* 6*d.* in subsistence to the manufacturer. But the advantage of manufactures is, that under their shape provisions may be more easily carried to a foreign market; and by their means our traders may more easily cheat strangers. Few, where it is not made, are judges of the value of lace. The importer may demand forty, and perhaps get thirty shillings for that which cost him but twenty.

12. Finally, there seem to be but three ways for a nation to acquire wealth. The first is by *war*, as the *Romans* did, in plundering their conquered neighbors. This is *robbery*.—The second by *commerce*, which is, generally *cheating*.—The third by *agriculture*, the only *honest way*; wherein man receives a real increase of the seed thrown into the ground, in a kind of continual miracle wrought by the hand of God in his favor, as a reward for his innocent life, and and his virtuous industry. B. F.

April 4, 1769.

PROVISION MADE IN CHINA AGAINST FAMINE.

Extract of a Letter to Dr. Percival.

I have somewhere read that in China an account is yearly taken of the number of people, and the quantities of provision produced. This account is transmitted to the Emperor, whose ministers can thence foresee a scarcity likely to happen in any province, and from what province it can best be supplied in good time. To facilitate the collecting of this account, and prevent the necessity of entering houses and spending time in asking and answering questions, each house is furnished with a little board to be hung without the door, during a certain time each year; on which board are marked certain words, against which the inhabitant is to mark number or quantity, somewhat in this manner:

Men,
Women,
Children,
Rice or Wheat,
Flesh, &c.

All under 16 are accounted children, and all above, men and women. Any other particulars which the government desires information of, are occasionally marked on the same boards. Thus the officers appointed to collect the accounts in each district, have only to pass before the doors, and enter into their book what they find marked on the board, without giving the least trouble to the family. There is a penalty on marking falsely, and as neighbors must know nearly the truth of each other's account, they dare not expose themselves by a false one, to each other's accusation. Perhaps such a regulation is scarcely practicable with us.[1]

NOTE RESPECTING TRADE AND MANUFACTURES.

Suppose a country, X, with three manufactures, as *cloth*, *silk*, *iron*, supplying three other countries, A, B, C, but is desirous of increasing the vent, and raising the price of cloth in favor of her own clothiers.

In order to this, she forbids the importation of foreign cloth from A.

A, in return, forbids silks from X.

Then the silk-workers complain of a decay of trade.

And X, to content them, forbids silks from B.

B, in return, forbids iron-ware from X.

Then the iron-workers complain of decay.

And X forbids the importation of iron from C.

C, in return, forbids cloth from X.

What is got by all these prohibitions?

Answer.—All four find their common stock of the enjoyments and conveniencies of life diminished.

London, July 7, 1767. B. F.

NOTIONS CONCERNING TRADE AND MERCHANTS.

1. Were it possible for men, remote from each other, to know easily one another's wants and abundances, and practicable for them on all occasions conveniently to meet and make fair exchanges of their respective commodities,

[1] The above passage is taken from Dr. Percival's Essays, Vol. III. p. 25, being an extract from a letter written to him by Dr. Franklin, on the subject of his observations on the state of population in Manchester and other adjacent places. B. V.

there would then be no use of the middle man or merchant; such a profession would not exist.

2. But since that is not possible, were all governments to appoint a number of public officers, whose duty and business it should be to inform themselves thoroughly of those wants and abundances, and to procure, by proper management, all the exchanges that would tend to increase the general happiness, such officers, if they could well discharge their trust, would deserve honors and salaries equivalent to their industry and fidelity.

3. But, as in large communities, and for the more general occasions of mankind, such officers have never been appointed, perhaps from a conviction that it would be *impracticable* for such an appointment effectually to answer its purpose, it seems necessary to permit men, who, for the *possible profits* in prospect, will undertake it, to fetch and carry, at all distances, the produce of other men's industry, and thereby assist those useful exchanges.

4. As the persons primarily interested in these exchanges cannot conveniently meet to make known their wants and abundances, and to bargain for exchanges, those who transport the goods should be interested to study the probability of these wants, and where to find the means of supplying them; and, since there exist no salaries or public rewards for them in proportion to their skill, industry, and utility to the people in general, nor to make them any compensation for their losses arising from inexpertness or from accident, it seems reasonable that for their encouragement to follow the business, they should be left to make such profits by it as they can, which, where it is open to all, will probably seldom be extravagant. And perhaps by this means the business will be better done for the general advantage, and those who do it more properly rewarded according to their merits, than would be the case were special officers to be appointed for that service.

[The Essay that follows was originally published in 1774, and is the joint work of George Whately and Dr. Franklin. The original work was indeed written by the former, and communicated to the latter, who rarely ever perused a literary production without correcting, improving, or augmenting its force and value, from his own sources. The corrections and additions which were made by Dr. Franklin, produced an amicable controversy between them, who had the best claim to call himself the author of it, which was closed by a determination to publish it, without any name, but under this designation—"By a well-wisher to the king and country." Dr. Franklin, who was never so solicitous about the reputation as about the practical utility of his writings, continued to consider his friend, Mr. Whately, as the author, and persisted even to the last in

that sentiment; for in a letter of the 21st of August, 1784, from Paris, addressed to him in the words, "*My dear old Friend*," he requests a copy of his excellent little work—"The Principles of Trade."[1] The whole work is given here, because with whatever success the separation might be accomplished, of what belongs to the one or the other, the separate parts would be each incomplete, and the whole is particularly worthy of preservation.]

PRINCIPLES OF TRADE.

Freedom and Protection are its best support; Industry the only means to render Manufactures cheap.

Of Coins, Exchange, and Bounties, particularly the Bounty on Corn.

Commerce is generally understood to be the basis on which the power of this country hath been raised, and on which it must ever stand.

Tous les sujets doivent leurs soins, et leurs lumieres, à l'etat.

DEDICATION.

To all those who have the welfare and prosperity of these kingdoms at heart, the following Essay, containing, we hope, useful and incontrovertible principles on the subjects treated of, is very heartily and affectionately inscribed.

March, 1774.

CONTENTS.

	Section
Trade or Commerce; what	1
Its End; Gain	2
Its best Support; Freedom and Protection	4
Fundamental Maxims for an Industrious People	20 & seq.
Trade benefited by Industry more than Money	26
Of Silver Coin, and its Scarcity	29
Of other Coins, and Paper Money	31 & seq.
Of Exchanges	34
Of a Par of Exchange	38
Of Bounties	40
Of Bounty on Wheat, and its being continued	42 & seq.

PREFACE.

It is a vain imagination that we exist only for ourselves, or our particular country. The all-wise Creator has ordained that *a mutual dependence* shall

[1] See Private Correspondence, Part I.

run through all his works; and though our limited capacities will not admit us fully to comprehend the nature and end of this connected chain of things, yet we may, and indeed ought, to inquire into and consider every thing which relates to our mutual dependence upon one another, and the springs and principles of our actions.

By this investigation we shall find that our wants, whether real or ideal, our passions, and our habits, are the springs of all our actions, and indeed the movers of the general intercourse and commerce between one man and another, one country and another.

Most writers upon trade have made it their business to support and explain some particular branches of traffic, or some favorite hypothesis. We shall, in the ensuing essay, use our best endeavors to remove from the friends of trade, and mankind in general, some prevailing prejudices, and to treat in a concise manner, upon a few self-evident principles and general maxims, under a persuasion, that if such maxims and principles are just, all deductions and discussions whatever may be tried by their standard.

Some very respectable friends have indulged us with their ideas and opinions. It is with the greatest pleasure we, in this second edition, most gratefully acknowledge the favor; and must add, that should the public hold this performance in any estimation, no small share belongs to those friends.

---

§ 1. Trade or commerce is the intercourse, as well between nation and nation, as between one man and another; by which we acquire whatsoever may be thought, or understood to be, of use or delight, whether real or ideal.

2. The spring or movement of such intercourse is, and ever must be, gain, or the hopes of gain; as neither the public, nor the individual, would intentionally pursue any unprofitable intercourse or commerce.

3. Gain being the principle of trade, the whole mystery of trade must therefore consist in prosecuting methods whereby gain or advantage may be obtained.

In transactions of trade, it is not to be supposed that, like gaming, what one party gains the other must necessarily lose. The gain to each may be equal. If A has more corn than he can consume, but wants cattle, and B has more cattle, but wants corn, an exchange is gain to each: hereby the common stock of comforts in life is increased.

4. Freedom and protection are most indisputable principles whereon the

success of trade must depend, as clearly as an open good road tends towards a safe and speedy intercourse; nor is there a greater enemy to trade than constraint.

5. Governments which have adopted those plain simple principles have been greatly benefited.

6. Were princes, in general, to abolish all sorts of prohibitory laws, trade in general would florish most in those countries where the happy situation, the mildness of the climate, the activity and industry of the inhabitants, would furnish means for a speedy and useful intercourse, reciprocally to supply any real or ideal want.

When princes make war by prohibiting commerce, each may hurt himself as much as his enemy. Traders, who by their business are promoting the common good of mankind, as well as farmers and fishermen, who labor for the subsistence of all, should never be interrupted or molested in their business, but enjoy the protection of all in the time of war as well as in time of peace.

This policy, those we are pleased to call barbarians, have, in a great measure, adopted; for the trading subjects of any power, with whom the emperor of Morocco may be at war, are not liable to capture, when within sight of his land, going or coming, and have otherwise free liberty to trade and reside in his dominions.

As a maritime power, we presume it is not thought right that Great Britain should grant such freedom, except partially; as in the case of war with France, when tobacco is allowed to be sent thither under the sanction of passports.

7. We are no more to expect this, than that the whole world should be governed by the same laws. In our opinion, however, no laws which the art of man can devise, will or can hinder, or entirely stop the current of, a profitable trade; any more than the severest laws could prevent the satisfying of hunger, when any chance or opportunity offered to gratify it.

8. Nevertheless, so far as it is possible, according to the different modes and constitutions of each state, freedom and protection should be ever had in view by its respective government.

9. For whatever law is enacted, abridging a freedom or liberty, which the true interest of the state demands, or which does not grant protection where it may be wanted, must clearly be detrimental.

10. We are well aware, that in many cases, individuals may endeavor at an intercourse or trade, whereby the public, in one particular point, may seem

injured; and yet it may be out of the power of the state to hinder it, without breaking in upon the freedom of trade; so that the Dutchman, who, when Antwerp was besieged, furnished arms, ammunition, and provision to the Spaniards, and gloried in it, though a chief magistrate of Amsterdam, was not so very wrong in his principles in general, as at first sight might appear: for this Dutchman ran the risk of losing his ammunition, &c. which, if taken, would have been indeed his loss, but a gain to the captors his countrymen; and if sold, and delivered to the enemy, brought profit to him, and in consequence to the state of which he was a member. This man, to evince how much he held freedom in trade to be essential, used a very strong figure; when owning his having furnished the enemy of the state with ammunition, &c. he added; that he would, to prosecute his trade, sail through hell, at the risk of singing his sails.

It is generally a vain imagination, that if we do not furnish an enemy with what he wants, he cannot be supplied elsewhere. Since we are to suffer the mischief he may do with it, why should we not receive the profit that arises on supplying it? Thus might the Dutchman have reasoned when he supplied the enemy with ammunition, &c.

11. We have, as a first principle, laid down what we apprehend every one must allow, that gain, or the hopes of gain, is the mover of all intercourse or trade. Herein, as above hinted, must be comprehended, all matters of use, in the first instance: and then, matters of ambition, delight, opinion: in one word, luxury.

12. Now things of real use can only be meat, drink, clothing, fuel, and habitation. The several particulars relative to these, every one's mind can suggest: to enumerate would almost be endless.

13. As to meat, in a country where corn, fruits, and cattle can be raised, and bred; the inhabitants must be wanting in industry, to cultivate the lands, or they cannot in the common course of things, want help from their neighbors, for sustenance.

The same as to drink; if for it they will content themselves, with the beverage made of their own corn, and fruits.

And so of clothing; if they can be satisfied to be clad with the manufactures made from the produce of their own country.

As to fuel and habitation, there are very few countries which do not afford these articles.

14. The real want of all or any of these necessaries, must, and ever will be, an incentive to labor; either by every individual himself, in the community, or by those, to whom an equivalent is given, for their labor.

15. When ambition, delight, opinion, otherwise luxury, come to be considered, the field is extremely enlarged; and it will require a copious deliberation and ascertainment.

16. For luxury may be carried to such a height, as to be thought by some, to be prejudicial to the state; though we, in a general sense, cannot well apprehend it can: inasmuch, as what we call riches, must be the cause of luxury, taken in all its branches.

17. Now riches, as we conceive them, consist in whatever either a state or an individual have, more than is necessary, to procure the above essentials, which are only of real use, viz. meat and drink, and clothes, fire and shelter.

This more or abundance, from whatsoever cause it may proceed, after the bartering for, and procuring those essentials, would absolutely, and to all intents, be useless, and of no manner of avail, were it not, that delight, and opinion, came in aid, to cause what we will call ideal wants; which wants, our passions, put into our make by the almighty hand that formed us, cause us to be almost as solicitous to provide for, and to supply, as if such wants were real.

18. We therefore must repeat, that from motives to acquire what may be thought of real or ideal use, spring the intercourse or trade between nations, as well as between individuals: and it seems to be self-evident that the produce of the land, and of industry in general, must supply all our wants: and consequently our trade.

19. Now, though it is hardly to be expected, as above hinted, that princes should allow of a general free trade or intercourse, because they seldom know their own true interest; yet it does not follow that fundamental maxims should not be attended to in governing an industrious people. Some of these principles we beg leave to expatiate on.

20. Land, to bring forth its increase, must be cultivated by man and beast. It is therefore the duty and interest of the state to rear both man and beast; and in their respective classes to nourish and cherish them.

21. Industry in all shapes, in all instances, and by all means, should be encouraged and protected: indolence by every possible method rooted out.

All that live must be subsisted. Subsistence costs something. He that is industrious produces by his industry, something that is an equivalent, and pays

for his subsistence. He is therefore no charge or burden to society. The indolent are an expense, uncompensated.

There can be no doubt but all kinds of employment that can be followed without prejudice from interruptions; work that can be taken up, and laid down, often in a day, without damage; such as spinning, knitting, weaving, &c. are highly advantageous to a country: because, in them, may be collected all the produce of those fragments of time that occur in family business, between the constant and necessary parts of it, that usually occupy females; as the time between rising and preparing breakfast; between breakfast and preparing for dinner, &c. The amount of all these fragments is, in the course of a year, very considerable to a single family; to a state proportionably. Highly profitable therefore it is, in this case also, to follow that divine direction, gather up the fragments that nothing be lost. Lost time is lost subsistence; it is therefore lost treasure.

Hereby in several families, many yards of linen have been produced from the employment of these fragments only, in one year, though such families were just the same in number as when not so employed.

It was an excellent saying of a certain Chinese emperor, "I will, if possible, have no idleness in my dominions; for if there be one man idle, some other man must suffer cold and hunger." We take this emperor's meaning to be, that the labor due to the public, by each individual, not being performed by the indolent, must naturally fall to the share of others, who must thereby suffer.

22. Whatever can contribute towards procuring from the land, and by industry, a produce wherewith other nations may be supplied, ought highly to be encouraged.

23. Materials wanting in a country to employ its inhabitants, ought by all means to be procured. Gold and silver, those tokens of riches, used as such, and otherwise of little use, are not near so estimable. The bartering of them for such materials is manifestly advantageous.

24. These, as we apprehend, are incontrovertible principles, on which a wise government will found its resolutions.

25. That the use of the produce of other countries for ideal wants ought to be discouraged, particularly when the produce of the land, or of industry, are not given in exchange for them, has been strongly urged by many. On the grand principle of freedom in trade, we cannot well admit it: for it is plain the luxurious will use, and the trader, to prosecute his gain, will procure, such

foreign produce: nor do prohibitory laws, or heavy duties, hinder. Nevertheless, to allow for a moment the doctrine, we will remark, that only the establishing it as a mode or fashion amongst the opulent and great, can possibly effectuate a disuse or discouragement.

In fact, the produce of other countries can hardly be obtained, unless by fraud or rapine, without giving the produce of our land or our industry in exchange for them. If we have mines of gold and silver, gold and silver may then be called the produce of our land. If we have not, we can only fairly obtain those metals by giving for them the produce of our land or industry. When we have them, they are then only that produce or industry in another shape; which we may give, if the trade requires it, and our other produce will not suit, in exchange for the produce of some other country that furnishes what we have more occasion for, or more desire. When we have, to an inconvenient degree, parted with our gold and silver, our industry is stimulated afresh to procure more; that by its means we may contrive to procure the same advantage.

In this place it will be proper to observe upon an erroneous doctrine, which has been often strenuously insisted on, that the cheapness of provisions must render manufactures cheap; and that plenty of money conduces to the benefit of trade. We shall endeavor to prove that industry alone does both.

26. Providence has wisely ordained that there should be different occupations and pursuits amongst men, and that the rich and poor should be actuated by different wants, whether real or ideal. It is next to impossible that the rich should be without desires, or wishes for greater acquisitions; or the poor without being necessitated to acquire what must supply their real wants. If the rich curtail their desires, or wishes, their riches serve, in proportion to their not using them, no more than ore in an unworked mine. If the poor man, by *one* day's labor can supply his real wants for *two* days, and sits idle the half of his time, he may be considered in such idle time as a monk or a cripple with regard to the community. If a thirst for acquisition move the rich man, he industriously employs all his riches. If the scarcity of provisions compel the poor man to work his whole time, he assuredly, by his industry, must make more manufactures than only working half of it. Hence we conclude, that gain is the first mover; and industry, and the desire of supplying our wants, the intermediate movers of all intercourse or trade. We however must observe, that a government truly wise should always, as far as the general good allows, be as solicitous to procure

plenty of provisions, whereby both man and beast may be kept in good health and strength, as to encourage industry. For industry cannot be sufficiently sustained without the strength arising from plenty of provisions.

The common people do not work for pleasure generally, but from necessity. Cheapness of provisions makes them more idle; less work is then done; it is then more in demand proportionally; and of course the price rises. Dearness of provisions obliges the manufacturer to work more days and more hours: thus more work is done than equals the usual demand; of course it becomes cheaper, and the manufactures in consequence.[1]

27. As to plenty of money being a benefit to trade and manufactures, we apprehend every one conversant therein must know that the coin, by which we generally understand money, of every respective state, is by no means the mover of the intercourse or tradings of the world in general. Gold and silver in bullion, or in an uncoined mass, are rather more so; being, in point of value, a merchandise less liable to variation than any other. It is true that coin may be liable, in the fluctuation of trade, to be made a merchandise of; but as by constant use, the pieces of coin become lighter than their original weight, they thereby are less fit for merchandise. We therefore may say, that coins, in general, can no otherwise be useful, than as the common measure between man and man, as serving to barter against, or exchange for, all kinds of commodities. Certain it is that coins cannot be ranked amongst those things which are *only of real use.* Let us therefore suppose pieces of coin to be counters; and to simplify the matter still more, suppose every manufacturer to have of these counters any sum whatever, will it follow, that any sort of manufacture shall be industriously attended to, or more work done than when no more counters than just enough to barter for the real wants of meat, drink, and clothes, &c. can be procured by labor? Surely no. It must be the desire of supplying our wants, which excites industry as above hinted, that alone sets that trade going, and only can procure plenty of manufactures.

---

[1] These maxims and many others in this tract, are to be considered as applicable to European society, particularly to England, where industry is not applied to the profit of the individual who labors; but where one or a few individuals, with large capitals, make a monopoly of the industry of thousands. These thousands barely subsisted by labor, and from the scantiness of their reward or wages, never able to reserve a surplus to accumulate for their children or for old age, are ever dependent on their employers; and where labor is the only occupation, and bare existence the only hope, there idleness is an enjoyment.

28. It is, nevertheless, the duty of government to stamp coins or counters of different sorts and denominations, so that time, of all things the most precious, be not wasted in settling the respective exchangings amongst mankind. Nevertheless the plenty or scarcity of those coins cannot entirely depend on any government, but on the general circulation and fluctuation of trade, which may make them a merchandise, without the least detriment; as it must be allowed, that the precious metals gold and silver, of which such coins are principally composed, are no other than merchandise acquired from countries where there are mines, by those countries which have none, in exchange for the produce of their land, or of their manufactures.

29. That the welfare of any state depends on its keeping *all* its gold and silver, either in bullion or in coin, must be founded on a very narrow principle indeed. All republics we know of, wisely think otherwise. Spain, the grand source of silver, has of late years, very justly, allowed the free exportation of it, paying a duty, as in Great Britain lead and tin do: nor prior to this permission could their penal laws in Spain hinder its being exported; for it was a commodity which that kingdom was under a necessity of giving as an equivalent for what was furnished to them by other countries.

Could Spain and Portugal have succeeded in executing their foolish laws for "*hedging in the cuckow*," as Locke calls it, and have kept at home all their gold and silver; those metals would, by this time, have been of little more value than so much lead or iron. Their plenty would have lessened their value. We see the folly of these edicts; but are not our own prohibitory and restrictive laws, that are professedly made with intention to bring a balance in our favor from our trade with foreign nations to be paid in money, and laws to prevent the necessity of exporting that money, which, if they could be thoroughly executed, would make money as plenty, and of as little value; I say, are not such laws akin to those Spanish edicts; follies of the same family?

30. In Great Britain, the silver coin bearing a disproportion to gold more than in neighboring states, of about five in the hundred, must, by that disproportion, become merchandise, as well for exportation, as for the manufactures at home, in which silver is employed, more than if it remained in the mass uncoined. This might be remedied without injuring the public, or touching the present standard, which never should be done, only by enacting that sixty-five shillings should be cut out of one pound weight of standard silver, instead of sixty-two,

which are the number now ordained by law. We must however remark, that, whenever by any extraordinary demand for silver, a pound weight, bought even for sixty-five shillings, can be sent abroad to advantage, or melted down for manufactures, no prohibitory laws will hinder its exportation, or melting, and still becoming a merchandise.

31. Coiners have pointed out, though at the risk of the gallows, a measure which we think would be advisable in some degree for government to adopt. They coin and circulate shillings of such weight as to gain ten to fourteen in the hundred, and upwards: as out of a pound of standard silver they cut sixty-eight or seventy-one shillings. That these light shillings or counters are useful, though the public be so greatly imposed on, is evident. It must be presumed, that every thing is put in practice by government to detect and stop this manifest roguery. If so, can it on the one hand be supposed the public purse should bear the burden of this fraud? yet, on the other hand, having no supply of legal shillings or counters, the utility of the illegal ones forces them, as it were, on the public. The power of the legislature to correct the erroneous proportion of five in the hundred, as above mentioned, is indubitable; but whether every private person possessed of these counters, or the public purse, should be obliged to bear the loss on a re-coinage, seems a difficult point to determine; as it may be alleged, that every private person has it in his power to accept, or refuse any coin, under the weight, as by law enacted, for each denomination. If the former, he does it to his own wrong, and must take the consequences. The individual, on the other hand, has to allege, the almost total want of lawful counters; together with the impossibility or neglect of hindering those of an inferior weight from being suffered to be current. It may be submitted, that as the use of coin is for public utility, any loss which arises in the coin either by wearing, or even by filing and sweating, ought to be made good by calling in the coin after a certain number of years from the time of coinage, and receiving the money called in at the charge of the public. We are well aware what latitude such a resolution might give to the coiners of shillings, the filers, and the sweaters of gold; but taking proper measures beforehand, this evil might, we think, in a great degree be prevented.

32. In the beginning of his present majesty's reign, quarter guineas were wisely ordered to be coined; whereby the want of silver coin was in some degree supplied: which would still be more so, were thirds and two-thirds of

guineas to be coined. We cannot conceive why this is not done; except that these denominations are not specified in his majesty's indenture with the master of the mint; which in our humble opinion ought to be rectified.

33. We think it not improper here to observe, that it matters not, whether silver or gold be called the standard money; but it seems most rational that the most scarce and precious metal should be the unit or standard.

That as to copper, it is fit for money, or a counter, as gold or silver, provided it be coined of a proper weight and fineness: and just so much will be useful as will serve to make up small parts in exchange between man and man, and no more ought to be coined.

As to paper circulating as money, it is highly profitable, as its quick passing from one to another is a gain of time, and thereby may be understood to add hands to the community: inasmuch as those, who would be employed in telling and weighing, will follow other business. The issuers or coiners of paper are understood to have an equivalent to answer what it is issued for, or valued at; nor can any metal or coin do more than find its value.

§ It is impossible for government to circumscribe, or fix the extent of paper credit, which must, of course, fluctuate. Government may as well pretend to lay down rules for the operations, or the confidence, of every individual, in the course of his trade. Any seeming temporary evil arising, must naturally work its own cure.

34. As some principles relative to exchange have in our opinion been treated of in a very confused manner, and some maxims have been held out upon that subject, which tend only to mislead, we shall here briefly lay down what, according to our opinion, are self-evident principles.

35. Exchange, by bills, between one country or city and another, we conceive to be this. One person wants to get a sum from any country or city; consequently has his bill or draft to sell: another wants to send a sum thither; and therefore agrees to buy such bill or draft. He has it at an agreed-for price, which is the course of the exchange. It is with this price for bills as with merchandise; when there is a scarcity of bills in the market, they are dear; when plenty, they are cheap.

36. We judge it needless to enter into the several courses and denominations of exchanges which custom hath established: they are taught at school. But we think we must offer a few words, to destroy an erroneous principle that has

misled some, and confused others; which is, that by authority, a certain par, or fixed price of exchange, should be settled between each respective country; thereby rendering the currency of exchange as fixed as the standard of coin.

37. We have above hinted, that plenty and scarcity must govern the course of exchange: which principle, duly considered, would suffice on the subject; but we will add, that no human foresight can absolutely judge of the almost numberless fluctuations in trade; which vary, sometimes directly, sometimes indirectly, between countries: consequently no state or potentate can, by authority, any more pretend to settle the currency of the prices of the several sorts of merchandise sent to and from their respective dominions, than they can a par of exchange. In point of merchandise, indeed, where there is a monopoly of particular commodities, an exception must be allowed, as to such articles; but this is not at all applicable to trade in general; for the encouragement of which we cannot too often repeat, that *freedom and security are most essentially necessary.*

38. Another specious doctrine, much labored by theorists, in consequence of that relating to the par, is, that the exchange between any particular country being above or below par, always shows whether their reciprocal trade be advantageous or disadvantageous. It is, and must be allowed, that in trade nothing is given without adequate returns or compensations; but these are so various and so fluctuating between countries, as often indirectly as directly, that there is no possibility of fixing a point from whence to argue; so that should there happen a greater variation than of two or three more in the hundred, at any certain period in the exchange, above or below what is called the par or equality of the money of one country to that of another, influenced by the fluctuations and circulations in trade, it does not follow, that a trade is advantageous or disadvantageous, excepting momentarily, if one may so say, which can be of no consequence to the public in general, as the trade from advantageous may become disadvantageous, and *vice versa;* and, consequently, the deducing of reasons from what in its nature must be fluctuating, can only help to embarrass, if not mislead.

39. To return to trade in general. Our principles, we apprehend, may hold good for all nations, and ought to be attended to by the legislative power of every nation. We will not discuss every particular point: nor is it to our purpose to examine the pretended principles or utility whereon monopolies are

generally established. That the wisdom of government should weigh and nicely consider any proposed regulation on those principles, we humbly judge to be self-evident; whereby may be seen whether it coincides with the general good. Solomon adviseth *not to counsel with a merchant for gain.* This, we presume, relates to the merchant's own particular profit; which, we repeat, must ever be the spring of his actions. Government ought, notwithstanding, to endeavor to procure particular informations from every one; not only from those actually employed, or those who have been concerned in particular branches of trade; but even from persons who may have considered of it theoretically and speculatively.

Perhaps, in general, it would be better if government meddled no farther with trade than to protect it, and let it take its course. Most of the statutes, or acts, edicts, arrets, and placarts of parliaments, princes, and states, for regulating, directing, or restraining of trade, have, we think, been either political blunders, or jobs obtained by artful men for private advantage, under pretence of public good. When Colbert assembled some wise old merchants of France, and desired their advice and opinion, how he could best serve and promote commerce, their answer, after consultation, was, in three words only, *Laissez nous faire:* Let us alone. It is said, by a very solid writer of the same nation, that he is well advanced in the science of politics who knows the full force of that maxim—*Pas trop gouverner:* Not to govern too much. Which, perhaps, would be of more use when applied to trade, than in any other public concern. It were therefore to be wished, that commerce was as free between all the nations of the world, as it is between the several counties of England: so would all, by mutual communication, obtain more enjoyments. Those counties do not ruin one another by trade; neither would the nations. No nation was ever ruined by trade; even seemingly the most disadvantageous.

Wherever desirable superfluities are imported, industry is excited; and therefore plenty is produced. Were only necessaries permitted to be purchased, men would work no more than was necessary for that purpose.

40. Though we wave a discussion on particular branches of trade, as the field is too large for our present purpose; and that particular laws and regulations may require variation, as the different intercourses, and even interests of states, by different fluctuations, may alter; yet, as what relates to bounties or premiums, which the legislature of Great Britain has thought fit to grant, hath

been by some deemed, if not ill-judged, unnecessary; we hope our time not ill bestowed, to consider of the fitness and rectitude of the principle on which we apprehend these bounties or premiums have been granted.

41. It must, we think, on all hands be allowed, that the principle whereon they are founded must be an encouragement tending to a general benefit, though granted on commodities, manufactures, or fisheries, carried on in particular places and countries, which are presumed or found to require aid from the public purse for farther improvement.

Of the bounties, some having had the proposed effect, are discontinued: others are continued, for the very reason they were first given.

In our opinion, no doubt can arise as to the utility of these grants from the public purse to individuals. The grand principle of trade, which is gain, is the foundation of bounties: for, as every individual makes a part of the whole public, consequently, whatever benefits the individual must benefit the public: hereby the wisdom of the legislature is most evident; nor should it in any wise be arraigned, though ill success attended any particular commodity, manufacture, or fishery, for the encouragement of which bounties have been established.

We are well aware that it is not impossible the purpose of bounty may have been perverted, with a view to improper gain; but it is the duty of the legislature to use the proper measures for preventing such iniquity. This abuse, however, cannot be adduced as an argument against the benefit arising from allowing bounties.

42. These principles in regard to bounties or premiums, are applicable to most articles of commerce, except wheat and other grain, which we shall consider and enlarge on, as being of a complicated nature, and concerning which mankind have, at particular times, been divided in opinion.

43. It seems to us, that this bounty on grain was intended, not only to encourage the cultivating of land for the raising of it in abundance in this kingdom, for the use of its inhabitants, but also to furnish our neighbors, whenever the kind hand of Providence should be pleased to grant a superfluity.

44. It never can be presumed that the encouragement by the bounty insures to the community an uninterrupted constant plenty; yet, when the grower of grain knows he may, by such bounty, have a chance of a foreign market for any excess he may have, more than the usual home consumption, he the more

willingly labors and improves his land, upon the presumption of having a vent for his superfluity, by a demand in foreign countries; so that he will not probably be distressed by abundance; which, strange as it may seem to some, might be the case by his want of sale, and his great charges of gathering in his crop.

45. As there are no public granaries in this kingdom, the legislature could devise no better means than to fix stated prices under which the bounty or encouragement from the public purse should be allowed. Whenever the current prices exceeded those stipulated, then such bounty should cease.

46. Few consider, or are affected, but by what is present. They see grain, by reason of scanty crops, dear; therefore all the doors for gain, to the cultivator of it, must always be kept shut. The common outcry is, that the exporting our wheat furnishes bread to our neighbors cheaper than it can be afforded to our poor at home; which affects our manufacturers, as they can thereby work cheaper. To this last allegation we must refer to what we have said, section 26; though the former, that wheat is, by the bounty, afforded to our neighbors cheaper than to us at home, must in general be without foundation; for the several items of charge attending the exportation of grain, such as carriage, factorage, commission, porterage, &c. The freight paid to our own shipping, to which alone the bounty is restrained, must, when duly considered, very sufficiently counterbalance the bounty; so that more than what is given out of the public purse is put into the pockets of individuals for the carriage, &c.: therefore we think we may well presume that, in general, grain exported comes dearer to the foreigner than to the consumer in Great Britain.

47. Nothing can be more evident, we apprehend, than that the superfluity of our grain being exported, is a clear profit to the kingdom, as much as any other produce of our labor, in manufactures, in tin, or any commodities whatsoever.

48. It behoves us, however, indubitably, to have an eye towards having a sufficiency of grain for food in this country, as we have laid down, section 26: and were the legislature to enact, that the justices of the peace, at the Christmas quarter session, should have power to summon all growers of grain, or dealers therein, and upon oath to examine them as to the quantity then remaining; returns of which quantities should be made to the lords of the treasury, to be laid before parliament; the legislature would, upon such returns, be able to judge whether it would be necessary to enable his majesty, with the advice of

his council, to put a stop to any farther exportation at such times as might be thought proper.

49. Or, it is submitted, whether the legislature would not act more consistent with the principle of granting bounties, by repealing the act allowing the present bounty on the several sorts of grain at the now fixed prices, and reduce these prices as follow:

On wheat from forty-eight to thirty-six or thirty-two shillings.

On barley from twenty-four to eighteen or sixteen a quarter; and so in proportion for any other grain. In short, diminish the present standard prices, under which the bounty is granted, one quarter or one third.

50. In our humble opinion, this last method would be by much the most simple and eligible, as consistent with our grand principle of freedom in trade, which would be cramped if dependent annually on parliamentary deliberation.

51. The advocates for not lowering the present stipulated prices that command the bounties from the public purse may allege, that our ancestors deemed them necessary, on the principle of granting any bounty at all, which we have above hinted, section 43. We do not controvert the wisdom of the principle for granting a bounty; for it must have been, and ever will be, an encouragement to cultivation; and consequently it would be highly improper wholly to discontinue it; nevertheless, if it has answered one great end proposed, which was cultivation and improvement, and that it is incontrovertible the cultivator has, by the improvements made by the encouragement of the bounty, a living profit at the reduced prices of thirty-two or thirty-six shillings, sixteen or eighteen, &c. as above, which probably, when our ancestors enacted the law for granting the bounty, they understood the cultivators could not have; it seems clear, that there ought to be the proposed change and reduction of the bounty prices, as above mentioned.

52. The French, intent on trade, have a few years since rectified a very gross mistake they labored under, in regard to their commerce in grain. One county or province in France should abound, and the neighboring one, though almost starving, should not be permitted to get grain from the plentiful province, without particular license from court, which cost no small trouble and expense. In sea-port towns wheat should be imported; and soon after, without leave of the magistrates, the owner should only have liberty to export one quarter or one third of it. They are now wiser; and through all the kingdom the corn trade is quite free: and what is more, all sorts of grain may be exported

upon French bottoms only, for their encouragement; copying, we presume, our law, whenever the market prices for three following days shall not exceed above forty-five shillings sterling a quarter for wheat: our reason for mentioning this is only to show that other nations are changing their destructive measures, and that it behoves us to be careful that we pay the greatest attention to our essential interests.

In inland high countries, remote from the sea, and whose rivers are small, running from the country, not to it, as is the case of Switzerland, great distress may arise from a course of bad harvests, if public granaries are not provided, and kept well stored. Anciently, too, before navigation was so general, ships so plenty, and commercial connexions so well established, even maritime countries might be occasionally distressed by bad crops. But such is now the facility of communication between those countries, that an unrestrained commerce can scarce ever fail of procuring a sufficiency for any of them. If, indeed, any government is so imprudent as to lay its hands on imported corn, forbid its exportation, or compel its sale at limited prices, there the people may suffer some famine from merchants avoiding their ports. But wherever commerce is known to be always free, and the merchant absolute master of his commodity, as in Holland, there will always be a reasonable supply.

When an exportation of corn takes place, occasioned by a higher price in some foreign country, it is common to raise a clamor, on the supposition that we shall thereby produce a domestic famine. Then follows a prohibition, founded on the imaginary distress of the poor. The poor, to be sure, if in distress, should be relieved; but if the farmer could have a high price for his corn, from the foreign demand, must he, by a prohibition of exportation, be compelled to take a low price, not of the poor only, but of every one that eats bread, even the richest? The duty of relieving the poor is incumbent on the rich; but, by this operation, the whole burden of it is laid on the farmer, who is to relieve the rich at the same time. Of the poor, too, those who are maintained by the parishes have no right to claim this sacrifice of the farmer; as, while they have their allowance, it makes no difference to them whether bread be cheap or dear. Those working poor who now mind business five or four days in the week, if bread should be so dear as to oblige them to work the whole six, required by the commandment, do not seem to be aggrieved so as to have a right to public redress. There will then remain, comparatively, only a few families in every district; who, from sickness or a great number of children,

will be so distressed by a high price of corn, as to need relief; and these should be taken care of, by particular benefactions, without restraining the farmer's profit.

Those who fear that exportation may so far drain the country of corn, as to starve ourselves, fear what never did nor ever can happen. They may as well when they view the tide ebbing towards the sea, fear that all the water will leave the river. The price of corn, like water, will find its own level. The more we export, the dearer it becomes at home. The more is received abroad, the cheaper it becomes there; and as soon as these prices are equal, the exportation stops of course. As the seasons vary in different countries, the calamity of a bad harvest is never universal. If then all ports were always open, and all commerce free, every maritime country would generally eat bread at the medium price, or average of all the different harvests; which would probably be more equal than we can make it by our artificial regulations, and therefore a more steady encouragement to agriculture. The nations would all have bread at this middle price; and that nation which at any time inhumanly refuses to relieve the distresses of another nation, deserves no compassion when in distress itself.

We shall here end these reflections, with our most ardent wishes for the prosperity of our country, and our hopes, that the doctrine we have endeavored to inculcate as to the necessity of protection and freedom, in order to insure success in trade, will be ever attended to by the legislature in forming their resolutions relating to the commerce of these kingdoms.

PREFACE TO THE APPENDIX.[1]

The clamor made of the great inconveniences suffered by the community in regard to the coin of this kingdom, prompted me in the beginning of his majesty's reign to give the public some reflections on coin in general; on gold and silver as merchandise; and I added my thoughts on paper passing as money.

As I trust the principles then laid down are founded in truth, and will serve now as well as then, though made fourteen years ago, to change any calculation would be of little use.

---

[1] This preface was written entirely by Mr. Whately; but is too valuable to be separated from the tract to which it is attached.

Some sections in the foregoing essay of principles of trade, which might in this appendix appear like a repetition, have been omitted.

I always resolved not to enter into any particular deduction from laws relating to coin; or into any minutiæ, as to accurate nicety in weights. My intention was, and still is, no more than to endeavor to show, as briefly as possible, that what relates to coin, is not of such a complex, abstruse nature as it is generally made; and that no more than common justice with common sense are required in all regulations concerning it.

Perhaps more weighty concerns may have prevented government doing more in regard to coin, than ordering quarter guineas to be made; which till this reign had not been done.

But as I now judge by the late act relating to gold coin, that the legislature is roused, possibly they may consider still more of that, as well as of silver coin.

Should these reflections prove of any public utility, my end will be answered.

REFLECTIONS ON COIN IN GENERAL.

1. Coins are pieces of metal, on which an impression is struck; which impression is understood by the legislature to ascertain the weight and the intrinsic value, or worth of each piece.

2. The real value of coins depends not on a piece being called a guinea, a crown, or a shilling; but the true worth of any particular piece of gold or silver, is what such piece contains of fine or pure gold or silver.

3. Silver and copper being mixed with gold, and copper with silver, are generally understood to render those metals more durable when circulating in coins; yet air and moisture evidently affect copper, whether by itself or mixed with other metal; whereas pure gold or silver are much less affected or corroded thereby.

4. The quantity of silver and copper so mixed by way of alloy, is fixed by the legislature. When melted with pure metal, or added or extracted to make a lawful proportion, both gold and silver are brought to what is called standard. This alloy of silver and copper is never reckoned of any value. The standard once fixed, should ever be invariable; since any alteration would be followed by great confusion, and detriment to the state.

5. It is for public convenience, and for facilitating the bartering between mankind for their respective wants, that coins were invented and made; for

were there no coins, gold and silver might be made, or left pure; and what we now call a guinea's worth of any thing, might be cut off from gold, and a crown's worth from silver, and might serve though not so commodiously as coin.

6. Hence it is evident that in whatever shape, form, or quality, these metals are, they are brought to be the most common measure between man and man, as serving to barter against or exchange for all kinds of commodities; and consequently are no more than an universal accepted merchandise; for gold and silver in bullion, that is to say, in an uncoined mass, and gold or silver in coin, being of equal weight, purity and fineness, must be of equal value, the one to the other; for the stamp on either of these metals, duly proportioned, neither adds to, nor takes from their intrinsic value.[1]

7. The prices of gold and silver as merchandise, must in all countries, like other commodities, fluctuate and vary according to the demand; and no detriment can arise therefrom, more than from the rise and fall of any other merchandise. But if when coined, a due proportion of these metals the one to the other, be not established, the disproportion will be felt and proved; and that metal wherein the excess in the proportion is allowed, will preferably be made use of, either in exportation or in manufacture; as is the case now, in this kingdom, in regard to silver coin, and which in some measure is the occasion of its scarcity.

For so long as 15 ounces and about one-fifth of pure silver in Great Britain, are ordained and deemed to be equal to one ounce of pure gold, whilst in neighboring states, as France and Holland, the proportion is fixed only 14 and a half ounces of pure silver, to one ounce of pure gold, it is very evident that our silver, when coined, will always be the most acceptable merchandise, by near five in the hundred, and consequently more liable to be taken away or melted down, than before it received the impression at the mint.

8. 62 shillings only are ordained by law to be coined from 12 ounces of standard silver; now, following the proportion above mentioned, of $15\frac{1}{2}$ to $14\frac{1}{2}$, no regard being necessary as to alloy, 65 shillings should be the quantity cut out of those 12 ounces.

---

[1] There is an incidental value, which arises from the authority of the state, which is in the nature of a credit or assurance of value given by the state, that either issues or authorises the issue of the coin.

9. No everlasting invariable fixation for coining can be made from a medium of the market price of gold and silver, though that medium might with ease be ascertained so as to hinder either coined gold or silver from becoming a merchandise; for whenever the price shall rise above that medium, so as to give a profit, whatever is coined will be made a merchandise. This in the nature of things, must come from the general exchangings, circulation, and fluctuation in trade, and cannot be hindered; but assuredly the false proportions may be amended by the legislature, and settled as the proportion between gold and silver is in other nations; so as not to make, as now is the case, our coined silver a merchandise, so much to be preferred to the same silver uncoined.

10. What has been said seems to be self-evident; but the following calculations made on the present current price of silver and gold, may serve to prove beyond all doubt, that the proportion now fixed between gold and silver should be altered and fixed as in other countries.

By law, 62 shillings are to be coined out of one pound, or 12 ounces of standard silver. This is 62 pence an ounce. Melt these 62 shillings, and in a bar; this pound weight at market will fetch 68 pence an ounce, or 68 shillings the pound. The difference therefore between coined and uncoined silver in Great Britain is now nine and two-thirds per cent.

Out of a pound or 12 ounces of standard gold, 44 guineas and a half are ordained to be coined. This is 3*l.* 17*s.* 10½*d.* an ounce. Now the current market price of standard gold is 3*l.* 19*s.* an ounce, which makes not quite 1½ per cent. difference between the coined and uncoined gold.

The state, out of duties imposed, pays for the charge of coining, as indeed it ought; for it is for public convenience, as already said, that coins are made. It is the current market price of gold and silver that must govern the carrying it to the mint. It is absurd to think any one should send gold to be coined that should cost more than 3*l.* 17*s.* 10½*d.* an ounce, or silver more than 62 pence the ounce; and as absurd would it be to pretend, that those prices *only* shall be the constant invariable prices. It is contended that there is not a proper proportion fixed in the value of one metal to another, and this requires alteration.

11. It may be urged, that should the legislature fix the proportion of silver to gold as in other countries, by ordering 65 shillings instead of 62 to be cut out of a pound of standard silver, yet still there would be 4¾ per cent.;

difference between coined and uncoined silver; whereas there is but about 1½ per cent. difference in gold.

On this we shall observe that the course of trade, not to mention extraordinary accidents, will make one metal more in request at one time than another; and the legislature in no one particular country, can bias or prescribe rules or laws to influence such demand; which ever must depend on the great chain of things, in which all the operations of this world are linked. Freedom and security only are wanted in trade; nor does coin require more, if a just proportion in the metals be settled.

12. To return to gold: it is matter of surprise, that the division of the piece called a guinea, has not been made smaller than just one half as it now is; that is, into quarters, thirds, and two-thirds. Hereby the want of silver coin might be greatly provided for; and those pieces, together with the light silver coin, which can *only now* remain with us, would sufficiently serve the uses in circulation.

In Portugal, where almost all their coin is gold, there are divisions of the moedas, or 27 shilling pieces, into tenths, sixths, quarters, thirds, halves, and two-thirds. Of the moeda and one-third, or 36 shilling piece, into eighths, quarters, and halves.

13. That to the lightness of the silver coin now remaining in Great Britain, we owe all the silver coin we now have, any person with weights and scales may prove; as upwards of 70 shillings coined in the reign of king William, or dextrously counterfeited by false coiners, will scarce weigh 12 ounces, or a pound troy.

14. All the art of man can never hinder a constant exportation and importation of gold and silver, to make up for the different calls and balances that may happen in trade; for were silver to be coined as above, 65 shillings out of a pound troy weight of standard silver; if those 65 shillings would sell at a price that makes it worth while to melt or export them, they must and will be considered and used as a merchandise; and the same will hold as to gold.

Though the proportion of about 14½ of pure silver to one of pure gold, in neighboring states be *now* fixed, in regard to their coin, and it is submitted such proportion should be attended to in this kingdom, yet that proportion may be subject to alteration; for this plain reason, that should the silver mines produce a quantity of that metal so as to make it greatly abound more in proportion

than it now does, and the gold mines produce no more than now they do, more silver must be requisite to purchase gold.

15. That the welfare of any state depends on its keeping *all* its gold and silver, either in bullion or in coin, is a very narrow principle; all the republics we know of, wisely think otherwise. It is an utter impossibility; nor should it ever be aimed at; for gold and silver are as clearly a merchandise, as lead and tin; and consequently should have a perfect freedom and liberty,[1] coined and uncoined, to go and to come, pass and repass, from one country to another, in the general circulation and fluctuation of commerce, which will ever carry a general balance with it: for we should as soon give our lead, our tin, or any other product of our land or industry, to those who want them, without an equivalent in some shape or other, as we should gold or silver; which it would be absurd to imagine can ever be done by our nation, or by any nation upon earth.

16. From Spain and Portugal come the greatest part of gold and silver: and the Spanish court very wisely permits the exportation of it on paying a duty, as in Great Britain lead and tin do, when exported; whereas heretofore, and as it still continues in Portugal, penal laws were enacted against the sending it out of the country. Surely princes by enacting such laws, could not think they had it in their power to decree and establish, that their subjects, or themselves, should not give an equivalent for what was furnished to them!

17. It is not our intention to descend into, or to discuss minutely, particular notions or systems, such as, "*That silver, and not gold, should be the standard money or coin.*"

"*That copper is an unfit material for money.*"

And, "*That paper circulating as, and called artificial money, is detrimental.*"

Yet as these doctrines seem to proceed from considering bullion, and money, or coin, in a different light from what we apprehend and have laid down, we will observe,

18. That it matters not whether silver or gold be called standard money;

---

[1] As a general principle this is unquestionably true; but it must be general, or every nation with whom commerce is extensively carried on, must alike adopt it, or the principle immediately assumes an unexceptionable character; and nations liable to be affected by it must provide means to counteract the effects of a sudden drain of the usual circulating medium, because the absence of a great quantity of the medium alters the price of exchange, or relative exchange of current money for necessary labor and subsistence, and depreciates other property.

but it seems most rational, that the most scarce and precious metal should be the unit or standard.

19. That as to copper, it is as fit for money or a counter, as gold and silver, provided it be coined of a proper weight and fineness: and just so much will be useful, as will serve to make up small parts in exchanges between man and man.

20. That as to paper money, it is far from being detrimental; on the contrary, it is highly profitable, as its quick passing between mankind, instead of telling over, or weighing metal in coin, or bullion, is a gain of what is most precious in life, which is time. And there is nothing clearer than that those who must be concerned in counting and weighing, being at liberty to employ themselves on other purposes, are an addition of hands in the community.

The idea of the too great extension of credit, by the circulation of paper for money, is evidently as erroneous as the doctrine of the non-exportation of gold and silver in bullion or coin: for were it not certain, that paper could command the equivalent of its agreed-for value, or that gold and silver in bullion or coin exported, would be returned in the course of trade in some other merchandise, neither paper would be used, or the metals exported. It is by means of the produce of the land, and the happy situation of this island, joined to the industry of its inhabitants, that those much-adored metals, gold and silver, have been procured: and so long as the sea does not overflow the land, and industry continues, so long will those metals not be wanting. And paper in the general chain of credit and commerce, is as useful as they are, since the issuers or coiners of that paper are understood to have some equivalent to answer for what the paper is valued at: and no metal or coin can do more than find its value.

Moreover, as incontestible advantages of paper, we must add, that the charge of coining or making it, is by no means proportionate to that of coining of metals: nor is it subject to waste by long use, or impaired by adulteration, sweating, or filing, as coins may.

A THOUGHT CONCERNING THE SUGAR ISLANDS.

Should it be agreed, and become a part of the law of nations, that the cultivators of the earth are not to be molested or interrupted in their peaceable and useful employment, the inhabitants of the sugar islands would come under the

protection of such a regulation, which would be a great advantage to the nations who at present hold those islands, since the cost of sugar to the consumer in those nations consists not only in the price he pays for it by the pound, but in the accumulated charge of all the taxes he pays in every war to fit out fleets and maintain troops for the defence of the islands that raise the sugar, and the ships that bring it home. But the expense of treasure is not all. A celebrated philosophical writer remarks, that when he considered the wars made in Africa for prisoners to raise sugar in America, the numbers slain in those wars, the numbers that being crowded in ships perish in the transportation, and the numbers that die under the severities of slavery, he could scarce look on a morsel of sugar without conceiving it spotted with human blood. If he had considered also the blood of one another which the white natives shed in fighting for those islands, he would have imagined his sugar not as spotted only, but as thoroughly dyed red. On these accounts I am persuaded that the subjects of the Emperor of Germany, and the Empress of Russia, who have no sugar islands, consume sugar cheaper at Vienna and Moscow, with all the charge of transporting it, after its arrival in Europe, than the citizens of London and Paris. And I sincerely believe, that if France and England were to decide by throwing dice, which should have the whole of their sugar islands, the loser in the throw would be the gainer. The future expense of defending them would be saved: the sugars would be bought cheaper by all Europe if the inhabitants might make it without interruption, and whoever imported the sugar, the same revenue might be raised by duties at the custom houses of the nation that consumed it. And on the whole, I conceive it would be better for the nations now possessing sugar colonies to give up their claim to them, let them govern themselves, and put them under the protection of all the powers of Europe as neutral countries open to the commerce of all, the profit of the present monopolies being by no means equivalent to the expense of maintaining them.

REMARKS, written by B. FRANKLIN, with a pencil, on the margin of a REPORT of JUDGE FOSTER, containing that Judge's argument in favor of the RIGHT OF IMPRESSING SEAMEN.

Extract from the Report, page 157, 158. *Edition* 1762.

" The only question at present is, whether mariners, persons who have freely chosen a seafaring life, persons whose education and employment have fitted them

for the service, and inured them to it, whether such persons may not be legally pressed into the service of the crown, whenever the public safety requireth it, *Ne quid detrimenti Respublica capiat.*

"For my part, I think they may. I think the crown hath a right to command the service of these people whenever the public safety calleth for it. The same right that it hath to require the personal[1] service of every man able[2] to bear arms in case of a sudden invasion or formidable insurrection. The right in both cases is founded on one and the same principle, the necessity of the case in order to the preservation of the whole.

"It would be time very ill spent to go about to prove that this nation can never be long in a state of safety, our coast defended, and our trade protected, without a naval force equal to all the emergencies that may happen. And how can we be secure of such a force? The keeping up the same naval force in time of peace, which will be absolutely necessary for our security in time of war, would be an absurd, a fruitless, and a ruinous expense.

"The only course then left, is for the crown to employ[3] upon emergent occasions, the mariners bred up in the merchant's service.

"And as for the mariner himself, he when taken into the service of the crown only changeth masters for a time: *his service and employment,*[4] continue the very

---

[1] This personal service, in cases of extreme necessity, is a principal branch of the allegiance every subject of England oweth to the crown. See 11. H. VII. c. 1. 1 E. III. c. 5. 16, 17. Car. I. c. 28.

Remarks.

[2] The conclusion here from the *whole* to a *part*, does not seem to be good logic. When the personal service of *every man* is called for, there the burthen is equal. Not so, when the service of part is called for, and others excused. If the alphabet should say, let us all fight for the defence of the whole; that is equal, and may therefore be just. But if they should say, let A. B. C. and D. go and fight for us, while we stay at home and sleep in whole skins; that is not equal, and therefore cannot be just.

[3] *Employ*—if you please. The word signifies engaging a man to work for me by offering him such wages as are sufficient to induce him to prefer my service. This is very different from *compelling* him to work for me *on such terms as I think proper.*

[4] *His service and employment continue the very same," &c.* These are false facts. *His service and employment* are not the same. Under the merchant he goes in an unarmed vessel not obliged to fight, but only to transport merchandise. In the king's service he is obliged to fight, and to hazard all the dangers of battle. Sickness on board the king's ships is also more common and more mortal. The merchant's service too he can quit at the end of a voyage, not the king's. Also the merchant's wages are much higher.

same, with this advantage, that the dangers of the sea and enemy are not so great in the service of the crown as in that of the merchant.

"I am very sensible[1] of the hardship the sailor suffereth from an impress in some particular cases, especially if pressed homeward-bound after a long voyage. But the merchants who hear me know, that an impress on outward-bound vessels would be attended with much greater inconveniencies to the trade of the kingdom; and yet that too is sometimes necessary. But where two evils present, a wise administration, if there be room for an option, will choose *the least*.[2]

"Page 159. War itself is a great evil, but it is chosen to avoid a greater. The practice of pressing is one of the mischiefs war bringeth with it. But *it is a maxim in law, and good policy too, that private mischiefs must be borne with patience for preventing a national calamity*.[3] And as no greater calamity can befal us than to be weak and defenceless at sea in a time of war, so I do not know that the wisdom of the nation hath hitherto found out any method of manning our navy less inconvenient[4] than pressing; and at the same time, equally sure and effectual.

"The expedient of a voluntary register, which was attempted in King William's time, had no effect.

"And some late schemes I have seen, appear to me more inconvenient to the mariner, and more inconsistent with the principles of liberty, than the practice of pressing: and what is still worse, they are in my opinion totally impracticable.[5]

---

[1] "*I am very sensible*," &c. Here are two things put in comparison that are not comparable, viz. injury to seamen, and inconvenience to trade. Inconvenience to the whole trade of a nation will not justify injustice to a single seaman. If the trade would suffer without his service, it is able and ought to be willing to offer him such wages as may induce him to afford his services voluntarily.

[2] "*The least*." The least evil in case seamen are wanted, is to give them such wages as will induce them to inlist voluntarily. Let this evil be divided among the whole nation, by an equal tax to pay such wages.

[3] Where is this maxim in law and good policy to be found? And how came that to be a maxim which is not consistent with common sense? If the maxim had been, that private mischiefs which prevent a national calamity ought to be generously compensated by that nation, one might have understood it. But that such private mischiefs are only to be borne with patience, is absurd.

[4] "*Less inconvenient*." Less inconvenient to whom? To the rich indeed, who ought to be taxed. No mischief *more* inconvenient to poor seamen could possibly be contrived.

[5] Twenty ineffectual or inconvenient schemes will not justify one that is unjust.

"Thus much I thought proper to say upon the foot of reason, and public utility, before I come to speak directly to the point of law.

"Page 159. The crown's right of impressing seamen is grounded upon common law.[1]

"Ibid. The result of evident necessity.[2]

"Page 160. There are many precedents of writs for pressing.

"Some are for pressing ships,

"Others for pressing mariners;

"And others for pressing ships and mariners.

"This general view will be sufficient to let us into the nature of these precedents. And though the affair of pressing ships is not now before me, yet I could not well avoid mentioning it, because many of the precedents I have met with and must cite, go as well to that, as to the business of pressing mariners. And taken together, they serve to show the power the crown hath constantly exercised over the whole naval force of the kingdom as well shipping as mariners, whenever the public service required it.

"This however must be observed, that no man served the crown in either case at his own expense. Masters and mariners received *full wages*,[3] and owners were constantly paid a full freight.

"Page 173. Do not these things incontestably presuppose the expediency, the necessity, and the legality of an impress in general? If they do not, one must entertain an opinion of the legislature acting and speaking in this manner, which it *will not be decent* for me to *mention* in this place.[4]

"Page 174. I readily admit that an impress is a restraint upon the natural liberty of those who are liable to it. But it must likewise be admitted, on the

---

[1] If impressing seamen is of right by common law, in Britain, slavery is then of right by common law there; there being no slavery worse than that sailors are subjected to.

[2] Pressing not so, if the end might be answered by giving higher wages.

[3] *Mariners received full wages.* Probably the same they received in the merchant's service. Full wages to a seaman in time of war, are the wages he has in the merchant's service in war time. But half such wages is not given in the king's ships to impressed seamen.

[4] I will risk that indecency, and mention it. They were not honest men; they acted unjustly by the seamen (who have no vote in elections, or being abroad cannot use them if they have them) to save their own purses and those of their constituents. Former parliaments acted the same injustice towards the laboring people, who had not forty shillings a-year in lands; after depriving them wickedly of their right to vote in elections, they limited their wages, and compelled them to work at such limited rates, on penalty of being sent to houses of correction. Sec. 8. H. 6. Chap. 7 and 8.

other hand, that every restraint upon natural liberty is not *eo nomine* illegal, or at all inconsistent with the principles of *civil* liberty. And if the restraint, be it to what degree soever, appeareth to be necessary to the good and welfare of the whole, and to be warranted by statute law, as well as immemorial usage, it cannot be complained of otherwise than as a private mischief;[1] which, as I said at the beginning, must under all governments whatsoever be submitted to for avoiding a public inconvenience.[2]

---

[1] "*It cannot be complained of otherwise than as a* PRIVATE MISCHIEF, *which* MUST *be submitted to for avoiding a public inconvenience.*"—I do not see the propriety of this *must*. The private mischief is the loss of liberty and hazard of life, with only half wages, to a great number of honest men. The public inconvenience is merely a higher rate of seamen's wages. He who thinks such private injustice *must* be done to avoid public inconvenience, may understand *law*, but seems imperfect in his knowledge of *equity*. Let us apply this author's doctrine to his own case. It is for the public service that courts should be had and judges appointed to administer the laws. The judges should be bred to the law and skilled in it, but their great salaries are a *public inconvenience*. To remove the inconvenience, let press warrants issue to arrest and apprehend the best lawyers, and compel them to serve as judges for half the money they would have made at the bar. Then tell them, that though this is to them a private mischief, it *must* be submitted to for avoiding a *public inconvenience*. Would the learned judge approve such use of his doctrine?

[2] When the author speaks of impressing, page 158, he diminishes the horror of the practice as much as possible, by presenting to the mind one sailor only suffering a hardship, as he tenderly calls it, in some *particular cases* only; and he places against this private mischief the inconvenience to the trade of the kingdom. But if, as I suppose is often the case, the sailor who is pressed and obliged to serve for the defence of this trade at the rate of 25*s*. a month, could have 3*l*. 15*s*. in the merchant's service, you take from him 50*s*. a month; and if you have 100,000 in your service, you rob that honest part of society and their poor families of 250,000*l*. per month, or three millions a year, and at the same time oblige them to hazard their lives in fighting for the defence of your trade; to the defence of which all ought indeed to contribute, (and sailors among the rest) in proportion to their profits by it; but this three millions is more than their share, if they did not pay with their persons; and when you force that, methinks you should excuse the other.

But it may be said, to give the king's seamen merchant's wages, would cost the nation too much, and call for more taxes. The question then will amount to this; whether it be just in a community that the richer part should compel the poorer to fight for them and their properties, for such wages as they think fit to allow, and punish them if they refuse? Our author tells us it is *legal*. I have not law enough to dispute his authorities, but I cannot persuade myself it is *equitable*. I will however own for the present, that pressing may be lawful when necessary; but then I contend that it may be used so as to produce the same good effect, *the public security*, without doing so much horrible injustice as attends the impressing common seamen. In order to be better understood, I would premise two things. 1st. That voluntary seamen might be had for the service, if they were suffi-

"Page 177. For I freely declare, that *ancient precedents* alone, unless supported by *modern practice*, weigh very little with me in questions of this nature.'

"Page 179. I make no apology for the length of my argument, because I hope the importance of the question will be thought *a sufficient* excuse for me in this respect." [2]

---

ciently paid. The proof of this is, that to serve in the same ships, and incur the same dangers, you have no occasion to impress captains, lieutenants, second lieutenants, midshipmen, pursers, nor any other officers. Why, but that the profit of their places, or the emoluments expected, are sufficient inducements? The business then is by impressing to find money sufficient to make the sailors all volunteers, as well as their officers; and this without any fresh burthen upon trade. The 2nd of my premises is, that 25*s*. a month with his share of the salt beef, pork and peas-pudding, being found sufficient for the subsistence of a hard-working seaman, it will certainly be so for a sedentary scholar or gentleman. I would then propose to form a treasury, out of which encouragement to seamen should be paid. To fill this treasury I would impress a number of civil officers who at present have great salaries, oblige them to serve in their respective offices for 25*s*. per month, with their share of the mess provisions, and throw the rest of their salaries into the seaman's treasury. If such a press-warrant was given me to execute, the first person I would press should be a recorder of Bristol, or a Mr. Justice Forster, because I might have need of his edifying example to show how such impressing ought to be borne with; for he would certainly find, that though to be reduced to 25*s*. per month might be a *private mischief*, yet that agreeably to his *maxim* of *law* and good policy, *it ought to be borne with patience* for preventing a national calamity. Then I would press the rest of the judges; and opening the Red Book, I would press every civil officer of government from 50*l*. a year up to 50,000*l*. which would throw an immense sum into our treasury; and these gentlemen could not well complain, since they would receive their 25*s*. a month and their rations, and that too without being obliged to fight. Lastly, I think I would impress the king, and confiscate his salary; but from an ancient prejudice I have in favor of that title, I would allow him the gentleman merchant's pay. I could not well go farther in his favor; for to say the truth, I am not quite satisfied of the necessity or utility of that office in Great Britain, as I see many florishing states in the world governed well and happily without it.

[1] The *modern practice* supported by ancient *precedents*, weighs as little with me. Both the one and the other only show that the constitution is yet imperfect, since in so general a case it doth not secure liberty but destroys it; and the parliaments are unjust, conniving at oppression of the poor, where the rich are to be gainers or savers by such oppression.

[2] The author could not well have made his argument shorter. It required a long discourse to throw dust in the eyes of common sense, confound all our ideas of right and wrong, make black seem white, and the worse appear the better opinion.

ON THE CRIMINAL LAWS, AND THE PRACTICE OF PRIVATEERING.

To B. VAUGHAN, ESQ.

MY DEAR FRIEND, *March* 14, 1785.

AMONG the pamphlets you lately sent me, was one intitled, "Thoughts on Executive Justice." In return for that, I send you a French one on the same subject, "Observations concernant l'Exécution de l'Article II. de la Déclaration sur le Vol." They are both addressed to the judges, but written, as you will see, in a very different spirit. The English author is for hanging *all* thieves. The Frenchman is for proportioning punishments to offences.

If we really believe, as we profess to believe, that the law of Moses was the law of God, the dictate of divine wisdom, infinitely superior to human; on what principles do we ordain death as the punishment of an offence, which, according to that law; was only to be punished by a restitution of fourfold? To put a man to death for an offence which does not deserve death, is it not a murder? And, as the French writer says, "*Doit-on punir un délit contre la société, par un crime contre la nature?*"

Superfluous property is the creature of society. Simple and mild laws were sufficient to guard the property that was merely necessary. The savage's bow, his hatchet, and his coat of skins, were sufficiently secured, without law, by the fear of personal resentment and retaliation. When, by virtue of the first laws, part of the society accumulated wealth and grew powerful, they enacted others more severe, and would protect their property at the expense of humanity. This was abusing their power, and commencing a tyranny. If a savage, before he entered into society, had been told,—"Your neighbor by this means may become owner of an hundred deer; but if your brother, or your son, or yourself, having no deer of your own, and being hungry, should kill one, an infamous death must be the consequence;" he would probably have preferred his liberty, and his common right of killing any deer, to all the advantages of society that might be proposed to him.

That it is better a hundred guilty persons should escape than that one innocent person should suffer, is a maxim that has been long and generally approved; never, that I know of, controverted. Even the sanguinary author

of the *Thoughts* agrees to it, adding well, "that the very thought of *injured* innocence, and much more that of *suffering* innocence, must awaken all our tenderest and most compassionate feelings, and at the same time raise our highest indignation against the instruments of it. But," he adds, "there is no danger of *either*, from a strict adherence to the laws."—Really! It is then impossible to make an unjust law? and if the law itself be unjust, may it not be the very "instrument" which ought "to raise the author's and every body's highest indignation?" I see, in the last newspapers from London, that a woman is capitally convicted at the Old Bailey, for privately stealing out of a shop some gauze, value fourteen shillings and threepence: is there any proportion between the injury done by a theft, value fourteen shillings and threepence, and the punishment of a human creature, by death, on a gibbet? Might not that woman, by her labor, have made the reparation ordained by God, in paying fourfold? Is not all punishment inflicted beyond the merit of the offence, so much punishment of innocence? In this light, how vast is the annual quantity of not only *injured* but *suffering* innocence in almost all the civilised states of Europe!

But it seems to have been thought, that this kind of innocence may be punished by way of *preventing* crimes. I have read, indeed, of a cruel Turk in Barbary, who, whenever he bought a new Christian slave, ordered him immediately to be hung up by the legs, and to receive a hundred blows of a cudgel on the soles of his feet, that the severe sense of the punishment and fear of incurring it thereafter, might prevent the faults that should merit it. Our author himself would hardly approve entirely of this Turk's conduct in the government of slaves; and yet he appears to recommend something like it for the government of English subjects, when he applauds the reply of Judge Burnet to the convict horse-stealer, who, being asked what he had to say why judgment of death should not pass against him, and answering, that it was hard to hang a man for *only* stealing a horse, was told by the judge, "Man, thou art not to be hanged *only* for stealing a horse, but that horses may not be stolen." The man's answer, if candidly examined, will I imagine appear reasonable, as being founded on the eternal principle of justice and equity, that punishments should be proportioned to offences; and the judge's reply brutal and unreasonable, though the writer "wishes all judges to carry it with them whenever they go the circuit, and to bear it in their minds as containing a wise reason for all the penal statutes, which they are called upon to put in execution. It at once

illustrates," says he, "the true grounds and reasons of all capital punishments whatsoever, namely, that every man's property as well as his life, may be held sacred and inviolate." Is there then no difference in value between property and life? If I think it right, that the crime of murder should be punished with death, not only as an equal punishment of the crime, but to prevent other murders, does it follow that I must approve of inflicting the same punishment for a little invasion on my property by theft? If I am not myself so barbarous, so bloody-minded and revengeful, as to kill a fellow-creature for stealing from me fourteen shillings and threepence, how can I approve of a law that does it? Montesquieu, who was himself a judge, endeavors to impress other maxims.

He must have known what humane judges feel on such occasions, and what the effects of those feelings; and so far from thinking that severe and excessive punishments prevent crimes, he asserts, as quoted by our French writer, that

"*L'atrocité des loix en empêche l'exécution.*

"*Lorsque la peine est sans mesure, on est souvent obligé de lui préférer l'impunité.*

"*La cause de tous les relâchemens vient de l'impunité des crimes, et non de la modération des peines.*"

It is said by those who know Europe generally, that there are more thefts committed and punished annually in England than in all the other nations put together. If this be so, there must be a cause or causes for such depravity in your common people. May not one be the deficiency of justice and morality in your national government, manifested in your oppressive conduct to your subjects, and unjust wars on your neighbors? View the long-persisted in, unjust monopolising treatment of Ireland at length acknowledged! View the plundering government exercised by your merchants in the Indies; the confiscating war made upon the American colonies; and, to say nothing of those upon France and Spain, view the late war upon Holland, which was seen by impartial Europe in no other light than that of a war of rapine and pillage; the hopes of an immense and easy prey being its only apparent and probably its true and real motive and encouragement. Justice is as strictly due between neighbor nations as between neighbor citizens. A highwayman is as much a robber when he plunders in a gang as when single; and a nation that makes an unjust war, is only a *great gang*. After employing your people in robbing the Dutch, strange is it, that being put out of that employ by peace, they still continue robbing and rob one another! *Piraterie*, as the French call it, or

privateering, is the universal bent of the English nation, at home and abroad, wherever settled. No less than seven hundred privateers were, it is said, commissioned in the last war! These were fitted out by merchants, to prey upon other merchants, who had never done them any injury. Is there probably any one of those privateering merchants of London, who were so ready to rob the merchants of Amsterdam, that would not as readily plunder another London merchant of the next street, if he could do it with the same impunity? The avidity, the *alieni appetens*, is the same; it is the fear alone of the gallows that makes the difference. How then can a nation, which, among the honestest of its people, has so many thieves by inclination, and whose government encouraged and commissioned no less than seven hundred gangs of robbers; how can such a nation have the face to condemn the crime in individuals, and hang up twenty of them in a morning? It naturally puts one in mind of a Newgate anecdote:—One of the prisoners complained, that in the night somebody had taken his buckles out of his shoes;—"What, the devil!" says another, "have we then *thieves* among us?—It must not be suffered;—let us search out the rogue, and pump him to death."

There is, however, one late instance of an English merchant who will not profit by such ill-gotten gain. He was, it seems, part-owner of a ship, which the other owners thought fit to employ as a letter of marque, and which took a number of French prizes. The booty being shared, he has now an agent here inquiring, by an advertisement in the Gazette, for those who suffered the loss, in order to make them, as far as in him lies, restitution. This conscientious man is a Quaker. The Scotch Presbyterians were formerly as tender; for there is still extant an ordinance of the town-council of Edinburgh, made soon after the reformation, "forbidding the purchase of prize goods, under pain of losing the freedom of the burgh for ever, with other punishment at the will of the magistrate; the practice of making prizes being contrary to good conscience, and the rule of treating Christian brethren as we would wish to be treated; and such goods *are not to be sold by any godly men within this burgh.*" The race of these godly men in Scotland is probably extinct, or their principles abandoned, since, as far as that nation had a hand in promoting the war against the colonies, prizes and confiscations are believed to have been a considerable motive.

It has been for some time a generally received opinion, that a military man is not to inquire whether a war be just or unjust; he is to execute his orders.

All princes who are disposed to become tyrants, must probably approve of this opinion, and be willing to establish it; but is it not a dangerous one? since, on that principle, if the tyrant commands his army to attack and destroy, not only an unoffending neighbor nation, but even his own subjects, the army is bound to obey. A negro slave, in our colonies, being commanded by his master to rob or murder a neighbor, or do any other immoral act, may refuse, and the magistrate will protect him in his refusal. The slavery then of a soldier is worse than that of a negro! A conscientious officer, if not restrained by the apprehension of its being imputed to another cause, may indeed resign, rather than be employed in an unjust war; but the private men are slaves for life; and they are perhaps incapable of judging for themselves. We can only lament their fate, and still more that of a sailor, who is often dragged by force from his honest occupation, and compelled to imbrue his hands in, perhaps, innocent blood. But methinks it well behoves merchants (men more enlightened by their education, and perfectly free from any such force or obligation) to consider well of the justice of a war, before they voluntarily engage a gang of ruffians to attack their fellow-merchants of a neighboring nation, to plunder them of their property, and perhaps ruin them and their families, if they yield it; or to wound, maim, or murder them, if they endeavor to defend it. Yet these things are done by Christian merchants, whether a war be just or unjust; and it can hardly be just on both sides. They are done by English and American merchants, who, nevertheless, complain of private theft, and hang by dozens the thieves they have taught by their own example.

It is high time, for the sake of humanity, that a stop were put to this enormity. The United States of America, though better situated than any European nation to make profit by privateering, (most of the trade of Europe, with the West Indies, passing before their doors) are, as far as in them lies, endeavoring to abolish the practice, by offering, in all their treaties with other powers, an article, engaging solemnly, that, in case of future war, no privateer shall be commissioned on either side; and that unarmed merchant-ships, on both sides, shall pursue their voyages unmolested.' This will be a happy improvement of

---

' This offer having been accepted by the late king of Prussia, a treaty of amity and commerce was concluded between that monarch and the United States, containing the following humane, philanthropic article; in the formation of which Dr. Franklin, as one of the American plenipotentiaries, was principally concerned, viz.

the law of nations. The humane and the just cannot but wish general success to the proposition. With unchangeable esteem and affection, ever your's,

B. FRANKLIN.

ON THE ELECTIVE FRANCHISES ENJOYED BY THE SMALL BOROUGHS IN ENGLAND.

(To Sir Charles Wyvill.)

SIR, *Passy, June* 16, 1785.

I send you herewith the sketch I promised you. Perhaps there may be some use in publishing it: for, if the power of choosing now in the boroughs continues to be allowed as a right, they may think themselves more justifiable in demanding more for it, or holding back longer than they would, if they find that it begins to be considered as an abuse.

I have the honor to be, &c. B. FRANKLIN.

PAPER ENCLOSED IN THE FOREGOING LETTER TO SIR C. WYVILL.

June 16, 1785.

No man, or body of men, in any nation, can have a just right to any privilege or franchise not common to the rest of the nation, without having done

---

ART. XXIII.

If war should arise between the two contracting parties, the merchants of either country, then residing in the other, shall be allowed to remain nine months to collect their debts and settle their affairs, and may depart freely, carrying off all their effects without molestation or hindrance; and all women and children, scholars of every faculty, cultivators of the earth, artisans, manufacturers, and fishermen, unarmed and inhabiting unfortified towns, villages, or places, and in general all others, whose occupations are for the common subsistence and benefit of mankind, shall be allowed to continue their respective employments, and shall not be molested in their persons, nor shall their houses and goods be burnt, or otherwise destroyed, nor their fields wasted, by the armed force of the enemy into whose power, by the events of war, they may happen to fall; but if any thing is necessary to be taken from them for the use of such armed force, the same shall be paid for at a reasonable price. And all merchants and trading vessels employed in exchanging the products of different places, and thereby rendering the necessaries, conveniences, and comforts of human life more easy to be obtained, and more general, shall be allowed to pass free and unmolested; and neither of the contracting powers shall grant or issue any commission to any private armed vessels, empowering them to take or destroy such trading vessels, or interrupt such commerce.

the nation some service equivalent, for which the franchise or privilege was the recompense or consideration.

No man, or body of men, can be justly deprived of a common right, but for some equivalent offence or injury done to the society in which he enjoyed that right.

If a number of men are unjustly deprived of a common right, and the same is given in addition to the common rights of another number, who have not merited such addition, the injustice is double.

Few, if any, of the boroughs in England, ever performed any *such* particular service to the nation, entitling them to what they now claim as a privilege in elections.

Originally, in England, when the king issued his writs calling upon counties, cities, and boroughs, to depute persons who should meet him in parliament, the intention was to obtain by that means more perfect information of the general state of the kingdom, its faculties, strength, and disposition; together with the advice their accumulated wisdom might afford him in "such arduous affairs of the realm" as he had to propose. And he might reasonably hope that measures approved by the deputies in such an assembly would, on their return home, be by them well explained, and rendered agreeable to their constituents and the nation in general. At that time, being sent to parliament was not considered as being put into the way of preferment, or increase of fortune; therefore no bribe was given to obtain the appointment. The deputies were to be paid wages by their constituents: therefore the being obliged to send and pay was considered rather as a duty than a privilege. At this day, in New England, many towns who may, and ought, to send members to the assembly, sometimes neglect to do it; they are then summoned to answer for their neglect, and fined if they cannot give a good excuse; such as some common misfortune, or some extraordinary public expense, which disabled them from affording, conveniently, the necessary wages. And the wages allowed being barely sufficient to defray the deputy's expense, no solicitations are used to be chosen.

In England, as soon as the being sent to parliament was found to be a step towards acquiring both honor and fortune, solicitations were practised, and where they were insufficient, money was given. Both the ambitious and avaricious became candidates. But to solicit the poor laborer for his vote being humiliating to the proud man, and to pay for it hurting the lover of money,

they, when they met, joined in an act to diminish both these inconveniences, by depriving the poor of the right of voting, which certainly they were not empowered to do by the electors their constituents, the majority of whom were probably people of little property. The act was, therefore, not only unjust, but void. These lower people were immediately afterwards oppressed by another act, empowering the justices to fix the hire of day laborers and their hours of work, and to send them to the house of correction if they refused to work for such hire; which was deposing them from their condition of freemen, and making them literally slaves.

But this was taking from *many* freemen a *common right*, and confining it to a *few*. To give it back again to the many is a different operation. Of this the few have no just cause to complain, because they still retain the common right they always had, and they lose only the exclusive additional power which they ought never to have had. And if they used it when they had it, as a means of obtaining money, they should in justice, were it practicable, be obliged to refund and distribute such money among those who had been so unjustly deprived of their right of voting, or forfeit it to the public.

Corporations, therefore, or boroughs, who from being originally called to send deputies to parliament, when it was considered merely as a duty, and not as a particular privilege, and therefore was never purchased by any equivalent service to the public, continue to send, now that by a change of times it affords them profit in bribes, or emoluments of various kinds, have in reality *no right* to such advantages; which are besides in effect prejudicial to the nation, some of those who buy thinking they may also sell.

They should therefore, in justice, be immediately deprived of such pretended right, and reduced to the condition of common freemen.

But they are perhaps too strong, and their interest too weighty, to permit such justice to be done. And a regard for public good in these people, influencing a voluntary resignation, is not to be expected.

If that be the case, it may be necessary to submit to the power of present circumstances, passions, and prejudices, and purchase, since we can do no better, their consent; as men, when they cannot otherwise recover property unjustly detained from them, advertise a reward to whoever will restore it, promising that no questions shall be asked. B. F.

LETTER FROM SIR CHARLES WYVILL, IN ANSWER TO THE FOREGOING.

SIR, *Paris, June* 17, 1785.

I have received the honor of your letter of the 16th instant, accompanied with a paper, in which you have proved, by a short train of clear and satisfactory reasoning, that the elective franchise now enjoyed by the small boroughs in England, is not an absolute right, which can only be forfeited on condition of misusage, but that it is a privilege conferred upon them in different periods of our history with partiality, and in a manner injurious to the common right of representation; and consequently, that it is a privilege justly resumable by the state, without the consent of such boroughs previously obtained, without any previous proof of their delinquency, or any compensation for their abolished franchise: at the same time, you have admitted the expediency, in the present state of our constitution, and under the various disadvantages attending an attempt to restore it, that a pecuniary offer should be proposed, as an inducement to the small boroughs, to make a voluntary surrender of their obnoxious privilege.

Accept, sir, my best thanks for this very kind communication of your sentiments on a subject of much importance to the happiness of England. From their own intrinsic solidity, those sentiments must have great weight with every unprejudiced mind, even if it should not be thought advisable to apprise the public. They are the sentiments of a man to whose ability and persevering virtue the American States are principally indebted for their political salvation. But highly as I esteem the wisdom of your opinion and advice, I place a still higher value on that philanthropy which has induced you to bestow so much attention on this subject, in the midst of your many urgent avocations, when just on the point of leaving Europe to return to America; I consider this not only as a mark of your general benevolence, but as a proof that your peculiar good-will to England, lately our common country, has neither been diminished by any personal disgust, nor impaired by the hostilities of an unhappy civil war. And I trust that, on this occasion, your benevolence has not been misplaced; since the advocates for a reformation of the English parliament have been, I believe, without exception, zealous opponents of the American war; and the success of their attempt to improve the constitution of England, may possibly conduct our two countries, in due time, to that modified reunion

which recent events will admit, and which you seem to agree with me in thinking would be equally honorable and advantageous to both.

I am, with the highest respect, your obliged and most obedient servant,

C. WYVILL.

MILITIA PREFERABLE TO REGULAR TROOPS.

Abbé Morellet's Questions and B. Franklin's Answers.

Je prie Monsieur Franklin de vouloir bien répondre aux questions suivantes by a *yes* or *no.*

Croit-il que les Etats Unis puissent dans la suite et après leur indépendance reconnue se passer de troupes régulières toujours sur pied?—Yes.

Feront-ils mieux de n'avoir que des milices nationales?—Certainly.

Des milices coûteront-elles moins cher à l'état ou plutôt à la nation; car ne peut-on pas dire que dans un état de choses où tous les citoyens doivent s'exercer à porter les armes il y a en fin de compte, en perte de tems, en dépenses pour l'armement, pour l'habillement, pour le rassemblement des troupes à certains tems de l'année, &c. une dépense réelle plus grande que celle qu'il faudroit pour tenir sur pied un petit nombre de troupes régulières?

Supposing a general militia to be equally expensive with a body of regular troops, yet the militia is preferable; because the whole being especially disciplined, has nothing to fear from a part.

Monsieur Franklin croit-il qu'on puisse entretenir en Amérique un corps de troupes sur pied dans chaque province confédérée sans mettre la liberté en danger?

Europe was without regular troops till lately. One powerful prince keeping an army always on foot makes it necessary for his neighbor to do the same to prevent surprise. We have no such dangerous neighbors in America. We shall probably keep magazines of arms and ammunition always filled, and no European power will ever find us so unprovided as England found us at the beginning of this war, or can prepare to invade us with a sufficient force in so short a time as not to give us time sufficient to discipline force sufficient to repel the invader.

Mr. F. therefore thinks, that to avoid not only the expense, but the danger of keeping up a body of regular troops in time of peace, none of the states separately will do it, nor the congress for the whole.

PROJECT FOR PREVENTING WARS.

(Extract of a Letter to Dr. Ingenhausz.)

Philadelphia, February 11, 1788.

"I lament with you the prospect of a horrid war, which is likely to engage a great part of mankind. There is so little good gained and so much mischief done generally by wars, that I wish the imprudence of undertaking them were more evident to princes; in which case I think they would be less frequent. If I were counsellor to the Empress of Russia, and found that she desired to possess some part of the dominions of the Grand Signior, I should advise her to compute what the annual taxes raised from that territory may amount to, and make him an offer of buying it at the rate of paying for it twenty years purchase. And if I were his counsellor, I should advise him to take the money, and cede the dominion of that territory. For I am of opinion, that a war to obtain it will cost her more than that sum, and the event uncertain; and the defence of it, will cost him as much; and not having embraced the offer, his loss is double. But to make and accept such an offer, these potentates should be both of them reasonable creatures; and free from the ambition of glory, &c. which perhaps is too much to be supposed.[1]

"I am glad that peace is likely to be established in your native country,[2] with so little expense of blood, though it be done in a manner not agreeable to a great part of the nation. If the French had entered with the Prussians, and made it the seat of war, the mischief would have been infinite."

SOME GOOD WHIG PRINCIPLES.

[*A printed paper, of which the following is a copy, was found among Dr. Franklin's papers, indorsed by him as above.*]

DECLARATION of those RIGHTS of the Commonalty of Great Britain, *without which they cannot be* FREE.

It is declared,

First, That the government of this realm, and the making of laws for the same, ought to be lodged in the hands of King, Lords of parliament, and Representatives of *the whole body* of the Freemen of this realm.

---

[1] See Letter to B. Vaughan, Esq. Oct. 24, 1788.—PRIVATE CORRESPONDENCE, Part I.

[2] Holland.

Secondly, That *every man* of the commonalty (excepting infants, insane persons, and criminals) is, of common right, and by the laws of God, *a freeman*, and entitled to the free enjoyment of *liberty*.

Thirdly, That liberty, or freedom, consists in having *an actual share* in the appointment of those who frame the laws, and who are to be the guardians of every man's life, property, and peace; for, the *all* of one man is as dear to him as the *all* of another; and the poor man has an *equal* right, but *more* need to have representatives in the legislature than the rich one.

Fourthly, That they who have *no* voice nor vote in the electing of representatives, *do not enjoy* liberty; but are absolutely *enslaved* to those who *have* votes, and to their representatives; for, to be enslaved, is to have governors whom *other men have set over us*, and to be subject to laws *made by the representatives of others*, without having had representatives of our own to give consent in *our* behalf.

Fifthly, That *a very great majority* of the commonalty of this realm are denied the privilege of voting for representatives in parliament; and, consequently, they are enslaved to a *small number*, who do now enjoy the privilege exclusively to themselves; but who, it may be presumed, are far from wishing to continue in the exclusive possession of a privilege, by which their fellow-subjects are deprived of *common right*, of *justice*, of *liberty*; and which, if not communicated to all, must speedily cause *the certain overthrow of our happy constitution*, and enslave us *all*.

And sixthly and lastly, We also say and do assert, that it is *the right* of the commonalty of this realm to elect a *new* House of Commons once in *every year*, according to the ancient and sacred laws of the land: because whenever a parliament continues in being for *a longer term*, very great numbers of the commonalty, who have arrived at the years of manhood since the last election, and *therefore* have a right to be actually represented in the House of Commons, are then *unjustly deprived* of that right.

END OF PART II.

PART III.

MISCELLANIES.

SECTION I.

RELIGIOUS SUBJECTS.

ARTICLES OF BELIEF, AND ACTS OF RELIGION,[1]

IN TWO PARTS.

[*Referred to in* MEMOIRS OF THE LIFE, *Part II. p. 67. 4to. Edit.*]

Here will I hold—If there is a power above us (and that there is, all nature cries aloud, through all her works), He must delight in virtue; and that which he delights in, must be happy.—CATO.

PART I.

FIRST PRINCIPLES.

I believe there is one Supreme most perfect being, author and father of the Gods themselves.

For I believe that man is not the most perfect being but one, but rather that there are many degrees of beings superior to him.

Also when I stretch my imagination through and beyond our system of planets, beyond the visible fixed stars themselves, into that space that is every way infinite, and conceive it filled with suns like ours, each with a chorus of worlds for ever moving round him; then this little ball on which we move, seems, even in my narrow imagination, to be almost nothing, and myself less than nothing, and of no sort of consequence.

When I think thus, I imagine it great vanity in me to suppose, that the *supremely-perfect* does in the least regard such an inconsiderable nothing as man; more especially, since it is impossible for me to have any clear idea of that which is infinite, and incomprehensible, I cannot conceive otherwise, than

[1] This paper is dated PHILADELPHIA, November 20, 1728.

that he *the infinite father* expects or requires no worship or praise from us, but that he is even INFINITELY ABOVE IT.

But since there is in all men something like a natural principle which inclines them to DEVOTION, or the worship of some unseen power;

And since men are endued with reason superior to all other animals, that we are in our world acquainted with;

Therefore I think it seems required of me, and my duty, as a man, to pay divine regards to SOMETHING.

I conceive then that the INFINITE has created many beings or gods, vastly superior to man, who can better conceive his perfections than we, and return him a more rational and glorious praise.

As among men, the praise of the ignorant or of children, is not regarded by the ingenious painter or architect, who is rather honored and pleased with the approbation of wise men and artists.

It may be these created gods are immortal; or it may be that after many ages, they are changed, and others supply their places.

Howbeit, I conceive that each of these is exceeding wise and good, and very powerful; and that each has made for himself one glorious sun, attended with a beautiful and admirable system of planets.

It is that particular wise and good God, who is the author and owner of our system, that I propose for the object of my praise and adoration.

For I conceive that he has in himself some of those passions he has planted in us, and that since he has given us reason whereby we are capable of observing his wisdom in the creation, he is not above caring for us, being pleased with our praise, and offended when we slight him, or neglect his glory.

I conceive for many reasons that he is a *good being;* and as I should be happy to have so wise, good and powerful a Being my friend, let me consider in what manner I shall make myself most acceptable to him.

Next to the praise resulting from and due to his wisdom, I believe he is pleased and delights in the happiness of those he has created; and since without virtue a man can have no happiness in this world, I firmly believe he delights to see me virtuous, because he is pleased when he sees me happy.

And since he has created many things which seem purely designed for the delight of man, I believe he is not offended when he sees his children solace themselves in any manner of pleasant exercises and innocent delights, and I think no pleasure innocent that is to man hurtful.

I *love* him therefore for his goodness, and I *adore* him for his wisdom.

Let me not fail, then, to praise my God continually, for it is his due, and it is all I can return for his many favors and great goodness to me; and let me resolve to be virtuous, that I may be happy, that I may please him, who is delighted to see me happy. Amen!

1. ADORATION. 2. PETITION. 3. THANKS.

PREL. Being mindful that before I address the Deity my soul ought to be calm and serene, free from passion and perturbation, or otherwise elevated with rational joy and pleasure, I ought to use a countenance that expresses a filial respect, mixed with a kind of smiling, that signifies inward joy, and satisfaction and admiration.

O wise God, my good Father!

Thou beholdest the sincerity of my heart and of my devotion: grant me a continuance of thy favor!

1. O Creator, O Father! I believe that thou art good, and that thou art *pleased with the pleasure* of thy children.—Praised be thy name for ever!

2. By thy power hast thou made the glorious sun, with his attending worlds; from the energy of thy mighty will they first received [their prodigious] motion, and by thy wisdom hast thou prescribed the wondrous laws by which they move.—Praised be thy name for ever!

3. By thy wisdom hast thou formed all things; thou hast created man, bestowing life and reason, and placed him in dignity superior to thy other earthly creatures.—Praised be thy name for ever!

4. Thy wisdom, thy power, and thy goodness, are everywhere clearly seen; in the air, and in the water, in the heavens and on the earth; thou providest for the various winged fowl and the innumerable inhabitants of the water; thou givest cold and heat, rain and sunshine in their season, and to the fruits of the earth their increase.—Praised be thy name for ever!

5. Thou abhorrest in thy creatures treachery and deceit, malice, revenge, [intemperance] and every other hurtful vice; but thou art a lover of justice and sincerity, of friendship and benevolence, and every virtue; thou art my friend, my father, and my benefactor.—Praised be thy name, O God, for ever! Amen.

[After this, it will not be improper to read part of some such book as Ray's Wisdom of God in the Creation, or Blackmore on the Creation, and the Arch-

bishop of Cambray's Demonstration of the being of a God, &c. or else spend some minutes in a serious silence, contemplating on those subjects.]

Then sing

MILTON'S HYMN TO THE CREATOR.

These are thy glorious works, Parent of Good!
Almighty; thine this universal frame,
Thus wondrous fair! Thyself how wondrous then!
Speak ye who best can tell, ye sons of light,
Angels, for ye behold him; and with songs,
And choral symphonies, day without night,
Circle his throne rejoicing. You in heaven,
On earth, join all ye creatures to extol
Him first, him last, him midst, and without end.
Fairest of stars, last in the train of night,
If rather thou belong'st not to the dawn,
Sure pledge of day! that crown'st the smiling morn
With thy bright circlet; praise him in thy sphere
While day arises, that sweet hour of prime.
Thou sun, of this great world both eye and soul,
Acknowledge him thy greater, sound his praise
In thy eternal course; both when thou climb'st,
And when high noon hast gain'd, and when thou fall'st.
Moon that now meet'st the orient sun, now fly'st
With the fix'd stars, fix'd in their orb that flies,
And ye five other wand'ring fires that move
In mystic dance, not without song, resound
His praise, that out of darkness call'd up light.
Air! and ye elements! the eldest birth
Of nature's womb, that in quaternions run
Perpetual circle, multiform, and mix'd,
And nourish all things, let your ceaseless change
Vary to our great Maker still new praise.
Ye mists and exhalations! that now rise
From hill or streaming lakes dusky or grey,
Till the sun paint your fleecy skirts with gold,
In honor to the world's great Author rise,
Whether to deck with clouds th' uncolor'd sky,
Or wet the thirsty earth with falling show'rs,
Rising or falling still advance his praise.
His praise, ye winds! that from four quarters blow,
Breathe soft or loud; and wave your tops, ye pines!
With every plant, in sign of worship wave.

Fountains! and ye that warble as ye flow
Melodious murmurs, warbling tune his praise,
Join voices all ye living souls, ye birds!
That singing, up to heaven's high gate ascend,
Bear on your wings and in your notes his praise.
Ye that in waters glide! and ye that walk
The earth! and stately tread; or lowly creep;
Witness *if I be silent*, ev'n or morn,
To hill or valley, fountain or fresh shade,
Made vocal by my song, and taught his praise.

[Here follows the reading of some book, or part of a book, discoursing on and exciting to moral virtue.]

PETITION.

PREL. Inasmuch as by reason of our ignorance we cannot be certain that many things which we often hear mentioned in the petitions of men to the Deity, would prove real goods if they were in our possession, and as I have reason to hope and believe that the goodness of my heavenly Father will not withhold from me a suitable share of temporal blessings, if by a virtuous and holy life I conciliate his favor and kindness: therefore I presume not to ask such things; but rather humbly, and with a sincere heart, express my earnest desire that he would graciously assist my continual endeavors and resolutions of eschewing vice and embracing virtue; which kind of supplications will at the same time remind me in a solemn manner of my extensive duty.

That I may be preserved from atheism, impiety, and profaneness; and in my addresses to Thee carefully avoid irreverence and ostentation, formality and odious hypocrisy,—Help me, O Father!

That I may be loyal to my prince, and faithful to my country, careful for its good, valiant in its defence, and obedient to its laws, abhorring treason as much as tyranny,—Help me, O Father!

That I may to those above me be dutiful, humble and submissive; avoiding pride, disrespect, and contumacy,—Help me, O Father!

That I may to those below me be gracious, condescending, and forgiving, using clemency, protecting innocent distress, avoiding cruelty, harshness, and oppression, insolence and unreasonable severity,—Help me, O Father!

That I may refrain from calumny and detraction, that I may abhor and avoid deceit and envy, fraud, flattery and hatred, malice, lying, and ingratitude,—Help me, O Father!

That I may be sincere in friendship, faithful in trust, and impartial in judgment, watchful against pride, and against anger (that momentary madness,)—Help me, O Father!

That I may be just in all my dealings, temperate in my pleasures, full of candor and ingenuousness, humanity and benevolence,—Help me, O Father!

That I may be grateful to my benefactors, and generous to my friends, exercising charity and liberality to the poor, and pity to the miserable,—Help me, O Father!

That I may possess integrity and evenness of mind, resolution in difficulties, and fortitude under affliction; that I may be punctual in performing my promises, peaceable and prudent in my behavior,—Help me, O Father!

That I may have tenderness for the weak, and reverent respect for the ancient; that I may be kind to my neighbors, good-natured to my companions, and hospitable to strangers,—Help me, O Father!

That I may be averse to craft and over-reaching, abhor extortion, perjury, and every kind of wickedness,—Help me, O Father!

That I may be honest and open-hearted, gentle, merciful, and good, cheerful in spirit, rejoicing in the good of others,—Help me, O Father!

That I may have a constant regard to honor and probity, that I may possess a perfect innocence and a good conscience, and at length become truly virtuous and magnanimous,—Help me, good God: Help me, O Father!

And, forasmuch as ingratitude is one of the most odious of vices, let me not be unmindful gratefully to acknowledge the favors I receive from heaven.

THANKS.

For peace and liberty, for food and raiment, for corn and wine, and milk, and every kind of healthful nourishment,—Good God, I thank thee!

For the common benefits of air and light, for useful fire and delicious water,—Good God, I thank thee!

For knowledge, and literature, and every useful art; for my friends and their prosperity, and for the fewness of my enemies,—Good God, I thank thee!

For all thy innumerable benefits; for life and reason, and the use of speech; for health and joy, and every pleasant hour,—My good God, I thank thee!

END OF THE FIRST PART.

N. B. No continuation of this has been found among Dr. Franklin's manuscripts.

A PARABLE AGAINST PERSECUTION, IN IMITATION OF SCRIPTURE LANGUAGE.[1]

[*Referred to in Memoirs of the Life, Part V. page* 405. 4*to. Edit.*]

1 And it came to pass after these things, that Abraham sat in the door of his tent, about the going down of the sun:

2 And behold a man, bowed with age, came from the way of the wilderness, leaning on a staff.

3 And Abraham rose and met him, and said unto him, Turn in, I pray thee, and wash thy feet, and tarry all night, and thou shalt arise early on the morrow, and go on thy way.

4 But the man said, Nay, for I will abide under this tree.

5 And Abraham pressed him greatly; so he turned, and they went into the tent, and Abraham baked unleavened bread, and they did eat.

6 And when Abraham saw that the man blessed not God, he said unto him, Wherefore dost thou not worship the most high God, Creator of heaven and earth?

7 And the man answered and said, I do not worship the God thou speakest of, neither do I call upon his name; for I have made to myself a God, which abideth alway in mine house, and provideth me with all things.

8 And Abraham's zeal was kindled against the man, and he arose and drove him forth with blows into the wilderness.

9 And at midnight God called unto Abraham, saying, Abraham, where is the stranger?

10 And Abraham answered and said, Lord he would not worship thee,

---

[1] Lord Kaimes, in his *Sketches of the History of Man*, (Vol. II. p. 472, 473.) thus expresses himself on the subject of this parable.

"The following parable against persecution was communicated to me by Dr. Franklin, of Philadelphia, a man who makes a great figure in the learned world; and who would still make a greater figure for benevolence and candor, were virtue as much regarded in this declining age as knowledge.

* * * * * * *

"The historical stile of the Old Testament is here finely imitated; and the moral must strike every one who is not sunk in stupidity and superstition. Were it really a chapter of Genesis, one is apt to think, that persecution could never have shown a bare face among Jews or Christians. But alas! that is a vain thought. Such a passage in the Old Testament, would avail as little against the rancorous passions of men, as the following passages in the New Testament, though persecution cannot be condemned in terms more explicit. "Him that is weak in the faith, receive you, but not to doubtful disputations. For," &c.

neither would he call upon thy name, therefore I have driven him out from before my face into the wilderness.

11 And God said, Have I borne with him these hundred ninety and eight years, and clothed him, notwithstanding his rebellion against me; and couldst not thou, that art thyself a sinner, bear with him one night?

12 And Abraham said, Let not the anger of the Lord wax hot against his servant; lo, I have sinned, forgive me, I pray thee.

13 And Abraham arose, and went forth into the wilderness, and sought diligently for the man, and found him, and returned with him to the tent; and when he had entreated him kindly, he sent him away on the morrow with gifts.

14 And God spake again unto Abraham, saying, For this thy sin shall thy seed be afflicted four hundred years in a strange land:

15 But for thy repentance will I deliver them; and they shall come forth with power, and with gladness of heart, and with much substance.

ON PERSECUTION IN FORMER AGES—OF DISSENTERS—STATE OF TOLERATION, &c.

To the Printer of the London Packet, June 3, 1772.

SIR,

I understand from the public papers, that in the debates on the bill for relieving the dissenters in the point of subscription to the church articles, sundry reflections were thrown out against that people, importing, "That they themselves are of a persecuting intolerant spirit, for that when they had the superiority, they persecuted the church, and still persecute it in *America*, where they compel its members to pay taxes for maintaining the presbyterian or independent worship, and at the same time, refuse them a toleration in the full exercise of their religion by the administrations of a bishop."

If we look back into history for the character of the present sects in Christianity, we shall find few that have not in their turns been persecutors, and complainers of persecution. The primitive Christians thought persecution extremely wrong in the Pagans, but practised it on one another. The first Protestants of the church of *England* blamed persecution in the *Romish* church, but practise it against the *Puritans:* these found it wrong in the bishops, but fell into the same practice themselves both here and in New England. To account for this we should remember, that the doctrine of *toleration* was not then

known, or had not prevailed in the world. Persecution was therefore not so much the fault of the sect as of the times. It was not in those days deemed wrong *in itself*. The general opinion was only, that those *who are in error* ought not to persecute *the truth*: but the *possessors of truth* were in the right to persecute *error*, in order to destroy it. Thus every sect believing itself possessed of *all truth*, and that every tenet differing from theirs was *error*, conceived that when the power was in their hands, persecution was a duty required of them by that God whom they supposed to be offended with heresy. By degrees more moderate, *and more modest* sentiments have taken place in the Christian world; and among Protestants particularly all disclaim persecution, none vindicate it, and but few practise it. We should then cease to reproach each other with what was done by our ancestors, but judge of the present character of sects or churches by their *present conduct* only.[1]

Now, to determine on the justice of this charge against the present dissenters, particularly those in *America*, let us consider the following facts. They went from England to establish a new country for themselves, *at their own expense*, where they might enjoy the free exercise of religion in their own way. When they had purchased the territory of the natives, they granted the lands out in townships, requiring for it neither purchase-money nor quit-rent, but this condition only to be complied with, that the freeholders should for ever support a gospel minister, (meaning probably one of the governing sects) and a free-school, within the township. Thus, what is commonly called Presbyterianism became the *established religion* of that country. All went on well in this way while the same religious opinions were general, the support of minister and school being raised by a proportionate tax on the lands. But in process of time some becoming Quakers,[2] some Baptists, and, of late years, some returning to the

---

[1] "Toleration in religion, though obvious to common understanding, was not however the production of reason, but of commerce. The advantage of toleration for promoting commerce, was discovered long before by the Portuguese. They were too zealous Catholics to venture so bold a measure in Portugal; but it was permitted in Goa, and the inquisition in that town was confined to Roman Catholics." *Lord Kaimes's Sketches of the History of Man*, Vol. II. p. 474.

[2] "No person appeared in New England who professed the opinion of the Quakers, until 1656; (i. e. about 36 years after the first settling of the colony;) when Mary Fisher and Ann Austin came from Barbadoes; and soon after, nine others arrived in the ship Speedwell from London." They were successful in their preaching; and the provincial government, wishing to keep the colony free from them, attempted to send away such as they discovered, and prevent the arrival of others. Securi-

church of England (through the laudable endeavors and a *proper application*[1] of their funds by the Society for Propagating the Gospel), objections were made to the payment of a tax appropriated to the support of a church they disapproved and had forsaken. The civil magistrates, however, continued for a time to collect and apply the tax according to the original laws which remained in force; and they did it more freely, as thinking it just and equitable, that the holders of lands should pay what was contracted to be paid when they were granted, as the only consideration for the grant, and what had been considered by all subsequent purchasers as a perpetual incumbrance on the estate, bought therefore at a proportionably cheaper rate; a payment which it was thought no honest man ought to avoid under the pretence of his having changed his religious persuasion. And this I suppose is one of the best grounds of demanding tythes of dissenters now in *England*. But the practice being clamored against by the episcopalians as persecution, the legislature of the province of *Massachusetts Bay*, near thirty years since, passed an act for their relief, requiring indeed the tax to be paid as usual, but directing that the several sums levied from members of the church of England, should be paid over to the minister of that church, with whom such members usually attended divine worship, which minister had power given him to receive, and on occasion *to recover the same by law*.

It seems that legislature considered the *end* of the tax was to secure and improve the morals of the people, and promote their happiness, by supporting among them the public worship of God, and the preaching of the gospel; that where particular people fancied a particular mode, that mode might probably therefore be of most use to those people; and that if the good was done, it was not so material in what mode or by whom it was done. The consideration that their brethren the dissenters in *England* were still compelled to pay tythes to the clergy of the church, had not weight enough with the legislature to prevent this moderate act, which still continues in full force; and I hope no uncharitable

---

ties, fines, banishment, imprisonment, and corporal punishments were instituted for this purpose; but with so little effect, that at last "a law was made for punishing with death, all such as should return into the jurisdiction after banishment. A few were hanged!" (See the History of the British dominions, 4to. 1773, p. 1. 8. 120.) B. V.

[1] They were to spread the gospel, and maintain a learned and orthodox clergy, where ministers were wanted or ill-provided; administering God's word and sacraments, and preventing atheism, infidelity, popery, and idolatry.

conduct of the church towards the dissenters will ever provoke them to repeal it.

With regard to a *bishop*, I know not upon what grounds the dissenters, either here or in America, are charged with refusing the benefit of such an officer to the church in that country. *Here* they seem to have naturally no concern in the affair. *There* they have no power to prevent it, if government should think fit to send one. They would probably *dislike*, indeed, to see an order of men established among them, from whose persecutions their fathers fled into that wilderness, and whose future domination they may possibly fear, *not knowing that their natures are changed.* But the non-appointment of bishops for America, seems to arise from another quarter. The same wisdom of government, probably, that prevents the sitting of convocations, and forbids by *noli-prosequis* the persecution of dissenters for non-subscription, avoids establishing bishops where the minds of the people are not yet prepared to receive them cordially, lest the public peace should be endangered.

And now let us see how this *persecution account* stands between the parties.

In *New England*, where the legislative bodies are almost to a man dissenters from the church of England,

1. There is no test to prevent churchmen from holding offices.

2. The sons of churchmen have the full benefit of the universities.

3. The taxes for support of public worship, when paid by churchmen, are given to the episcopal minister.

In *Old England*,

1. Dissenters are excluded from all offices of profit and honor.

2. The benefits of education in the universities are appropriated to the sons of churchmen.

3. The clergy of the dissenters receive none of the tythes paid by their people, who must be at the additional charge of maintaining their own separate worship.

But it is said, the dissenters of America *oppose* the introduction of a bishop.

In fact it is not alone the dissenters there that give opposition (if *not encouraging* must be termed *opposing*), but the laity in general dislike the project, and some even of the clergy. The inhabitants of Virginia are almost all episcopalians. The church is fully established there, and the council and general assembly are perhaps to a man its members; yet, when lately at a meeting of the clergy a resolution was taken to apply for a bishop, against which several how-

ever protested, the assembly of the province at their next meeting expressed their disapprobation of the thing in the strongest manner, by unanimously ordering the thanks of the house to the protesters; for many of the American laity of the church think it some advantage, whether their own young men come to England for ordination and improve themselves at the same time by conversation with the learned here, or the congregations are supplied by Englishmen, who have had the benefit of education in English universities, and are ordained before they come abroad. They do not therefore see the necessity of a bishop merely for ordination, and confirmation is deemed among them a ceremony of no very great importance, since few seek it in England, where bishops are in plenty. These sentiments prevail with many churchmen there, not to promote a design which they think must sooner or later saddle them with great expenses to support it. As to the dissenters, their minds might probably be more conciliated to the measure, if the bishops here should, in their wisdom and goodness, think fit to set their sacred character in a more friendly light, by dropping their opposition to the dissenters' application for relief in subscription, and declaring their willingness that dissenters should be capable of offices, enjoy the benefit of education in the universities, and the privilege of appropriating their tythes to the support of their own clergy. In all these points of toleration they appear far behind the present dissenters of New England, and it may seem to some a step below the dignity of bishops to follow the example of such inferiors. I do not however despair of their doing it some time or other, since nothing of the kind is too hard for *true Christian humility*. I am, Sir, yours, &c. A NEW ENGLAND MAN.

A PARABLE ON BROTHERLY LOVE, &c.

In those days there was no worker of iron in all the land. And the merchants of Midian passed by with their camels, bearing spices, and myrrh, and balm, and wares of iron.

And Reuben bought an axe of the Ishmaelite merchants, which he prized highly, for there was none in his father's house.

And Simeon said unto Reuben his brother, Lend me, I pray thee, thine axe. But he refused, and would not.

And Levi also said unto him, My brother, lend me, I pray thee, thine axe; and he refused him also.

Then came Judah unto Reuben, and entreated him, saying, Lo! thou lovest me, and I have always loved thee, do not refuse me the use of thine axe.

But Reuben turned from him, and refused him likewise.

Now it came to pass, that Reuben hewed timber on the bank of the river, and his axe fell therein, and he could by no means find it.

But Simeon, Levi, and Judah, had sent a messenger after the Ishmaelites with money, and had bought for themselves each an axe.

Then came Reuben unto Simeon and said, Lo! I have lost mine axe, and my work is unfinished, lend me thine, I pray thee.

And Simeon answered him, saying, Thou wouldest not lend me thine axe, therefore will I not lend thee mine.

Then went he unto Levi, and said unto him, My brother, thou knowest my loss and my necessity; lend me, I pray thee, thine axe.

And Levi reproached him, saying, Thou wouldest not lend me thine axe when I desired it, but I will be better than thou, and will lend thee mine.

And Reuben was grieved at the rebuke of Levi, and being ashamed, turned from him, and took not the axe, but sought his brother Judah,

And as he drew near, Judah beheld his countenance as it were covered with grief and shame; and he prevented him, saying, My brother, I know thy loss; but why should it trouble thee? Lo! have I not an axe that will serve both thee and me? Take it, I pray thee, and use it as thine own.

And Reuben fell on his neck, and kissed him, with tears, saying, Thy kindness is great, but thy goodness in forgiving me is greater. Thou art indeed my brother, and whilst I live will I surely love thee.

And Judah said, Let us also love our other brethren; behold, are we not all of one blood?

And Joseph saw these things, and reported them to his father Jacob.

And Jacob said, Reuben did wrong, but he repented. Simeon also did wrong; and Levi was not altogether blameless:

But the heart of Judah is princely. Judah hath the soul of a king. His father's children shall bow down before him, and he shall rule over his brethren,

SECTION II.

VARIOUS SUBJECTS.

THE BUSY-BODY.—NO. I.

From the American Weekly Mercury, from Tuesday, Jan. 28, to Tuesday, Feb. 4, 1728—9.

[Referred to in Memoirs of the Life, Part I. page 50. 4to ed.]

MR. ANDREW BRADFORD,

I DESIGN this to acquaint you, that I, who have long been one of your courteous readers, have lately entertained some thought of setting up for an author myself; not out of the least vanity, I assure you, or desire of showing my parts, but purely for the good of my country.

I have often observed with concern, that your Mercury is not always equally entertaining. The delay of ships expected in, and want of fresh advices from Europe, make it frequently very dull; and I find the freezing of our river has the same effect on news as trade. With more concern have I continually observed the growing vices and follies of my country-folk; and though reformation is properly the concern of every man, that is, every one ought to mend one; yet it is too true in this case, that what is every body's business is no body's business; and the business is done accordingly. I therefore, upon mature deliberation, think fit to take no body's business wholly into my own hands; and, out of zeal for the public good, design to erect myself into a kind of *censor morum;* purposing, with your allowance, to make use of the Weekly Mercury as a vehicle in which my remonstrances shall be conveyed to the world.

I am sensible I have in this particular undertaken a very unthankful office, and expect little besides my labor for my pains. Nay, it is probable, I may displease a great number of your readers, who will not very well like to pay ten shillings a year for being told of their faults. But as most people delight in censure when they themselves are not the objects of it, if any are offended at

my publicly exposing their private vices, I promise they shall have the satisfaction, in a very little time, of seeing their good friends and neighbors in the same circumstances.

However, let the fair sex be assured, that I shall always treat them and their affairs with the utmost decency and respect. I intend now and then to dedicate a chapter wholly to their service; and if my lectures any way contribute to the embellishment of their minds, and brightening of their understandings, without offending their modesty, I doubt not of having their favor and encouragement.

It is certain, that no country in the world produces naturally finer spirits than ours; men of genius for every kind of science, and capable of acquiring to perfection every qualification that is in esteem among mankind. But as few here have the advantage of good books, for want of which good conversation is still more scarce, it would doubtless have been very acceptable to your readers, if, instead of an old out-of-date article from Muscovy or Hungary, you had entertained them with some well-chosen extract from a good author. This I shall sometimes do, when I happen to have nothing of my own to say that I think of more consequence. Sometimes I purpose to deliver lectures of morality or philosophy, and (because I am naturally inclined to be meddling with things that do not concern me) perhaps I may sometimes talk politics. And if I can by any means furnish out a weekly entertainment for the public that will give a rational diversion, and at the same time be instructive to the readers, I shall think my leisure hours well employed; and if you publish this, I hereby invite all ingenious gentlemen and others (that approve of such an undertaking) to my assistance and correspondence.

It is like by this time, you have a curiosity to be acquainted with my name and character. As I do not aim at public praise, I design to remain concealed; and there are such numbers of our family and relations at this time in the country, that though I have signed my name at full length, I am not under the least apprehension of being distinguished and discovered by it. My character, indeed, I would favor you with, but that I am cautious of praising myself, lest I should be told my trumpeter's dead; and I cannot find in my heart at present, to say any thing to my own disadvantage.

It is very common with authors, in their first performances, to talk to their readers thus: If this meets with a suitable reception, or, if this should meet with

due encouragement, I shall hereafter publish, &c. This only manifests the value they put on their own writings, since they think to frighten the public into their applause, by threatening, that unless you approve what they have already wrote, they intend never to write again; when perhaps it may not be a pin matter, whether they ever do or no. As I have not observed the critics to be more favorable on this account, I shall always avoid saying any thing of the kind; and conclude with telling you, that if you send me a bottle of ink and a quire of paper by the bearer, you may depend on hearing further from, Sir, your most humble servant, THE BUSY-BODY.

THE BUSY-BODY.—NO. II.

From Tuesday, February 4, to Tuesday, February 11, 1728—9.

All fools have still an itching to deride,
And fain would be upon the laughing side.—POPE.

MONSIEUR de la Rochefoucault tells us somewhere in his Memoirs, that the Prince of Condé delighted much in ridicule, and used frequently to shut himself up for half a day together in his chamber, with a gentleman that was his favorite, purposely to divert himself with examining what was the foible or ridiculous side of every noted person in the court. That gentleman said afterwards in some company, that he thought nothing was more ridiculous in any body, than this same humor in the prince; and I am somewhat inclined to be of this opinion. The general tendency there is among us to this embellishment (which I fear has too often grossly imposed upon my loving countrymen instead of wit), and the applause it meets with from a rising generation, fill me with fearful apprehensions for the future reputation of my country; a young man of modesty (which is the most certain indication of large capacities) is hereby discouraged from attempting to make any figure in life; his apprehensions of being outlaughed, will force him to continue in a restless obscurity, without having an opportunity of knowing his own merit himself or discovering it to the world, rather than venture to oppose himself in a place where a pun or a sneer shall pass for wit, noise for reason, and the strength of the argument be judged by that of the lungs. Among these witty gentlemen let us take a view

of Ridentius; what a contemptible figure does he make with his train of paltry admirers! This wight shall give himself an hour's diversion with the cock of a man's hat, the heels of his shoes, an unguarded expression in his discourse, or even some personal defect; and the height of his low ambition is to put some one of the company to the blush, who perhaps must pay an equal share of the reckoning with himself. If such a fellow makes laughing the sole end and purpose of his life, if it is necessary to his constitution, or if he has a great desire of growing suddenly fat, let him eat; let him give public notice where any dull stupid rogues may get a quart of four-penny for being laughed at; but it is barbarously unhandsome when friends meet for the benefit of conversation, and a proper relaxation from business, that one should be the butt of the company, and four men made merry at the cost of the fifth.

How different from this character is that of the good-natured gay Eugenius! who never spoke yet but with a design to divert and please; and who was never yet baulked in his intention. Eugenius takes more delight in applying the wit of his friends, than in being admired himself; and if any one of the company is so unfortunate as to be touched a little too nearly, he will make use of some ingenious artifice to turn the edge of ridicule another way, choosing rather to make himself a public jest, than be at the pain of seeing his friend in confusion.

Among the tribe of laughers I reckon the petty gentlemen that write satires, and carry them about in their pockets, reading them themselves in all company they happen into; taking an advantage of the ill taste of the town, to make themselves famous for a pack of paltry low nonsense, for which they deserve to be kicked rather than admired, by all who have the least tincture of politeness. These I take to be the most incorrigible of all my readers; nay, I expect they will be squibbing at the Busy-Body himself. However, the only favor he begs of them is this, that if they cannot control their overbearing itch of scribbling, let him be attacked in downright biting lyrics; for there is no satire he dreads half so much as an attempt towards a panegyric.

THE BUSY-BODY.—NO. III.

From Tuesday, February 11, *to Tuesday, February* 18, 1728—9.

Non vultus instantis Tyranni
Mente quatit solida, nec auster,
Dux inquieti turbidus Adriæ,
Nec fulminantis magna Jovis manus.—HOR.

It is said that the Persians, in their ancient constitution, had public schools in which virtue was taught as a liberal art or science; and it is certainly of more consequence to a man, that he has learnt to govern his passions in spite of temptation, to be just in his dealings, to be temperate in his pleasures, to support himself with fortitude under his misfortunes, to behave with prudence in all his affairs, and in every circumstance of life; I say it is of much more real advantage to him to be thus qualified, than to be a master of all the arts and sciences in the world beside.

Virtue alone is sufficient to make a man great, glorious, and happy. He that is acquainted with Cato, as I am, cannot help thinking as I do now, and will acknowledge he deserves the name, without being honored by it. Cato is a man whom fortune has placed in the most obscure part of the country. His circumstances are such, as only put him above necessity, without affording him many superfluities; yet who is greater than Cato? I happened but the other day to be at a house in town, where, among others, were met men of the most note in this place: Cato had business with some of them, and knocked at the door. The most trifling actions of a man, in my opinion, as well as the smallest features and lineaments of the face, give a nice observer some notion of his mind. Methought he rapped in such a peculiar manner, as seemed of itself to express there was one who deserved as well as desired admission. He appeared in the plainest country garb; his great coat was coarse, and looked old and threadbare; his linen was homespun; his beard, perhaps, of seven days' growth; his shoes thick and heavy; and every part of his dress corresponding. Why was this man received with such concurring respect from every person in the room, even from those who had never known him or seen him before? It was not an exquisite form of person, or grandeur of dress, that struck us with admiration. I believe long habits of virtue have a sensible effect on the countenance: there was something in the air of his face that

manifested the true greatness of his mind, which likewise appeared in all he said, and in every part of his behaviour, obliging us to regard him with a kind of veneration. His aspect is sweetened with humanity and benevolence, and at the same time emboldened with resolution, equally free from diffident bashfulness and an unbecoming assurance. The consciousness of his own innate worth and unshaken integrity, renders him calm and undaunted in the presence of the most great and powerful, and upon the most extraordinary occasions. His strict justice and known impartiality, make him the arbitrator and decider of all differences that arise for many miles around him, without putting his neighbors to the charge, perplexity, and uncertainty of law-suits. He always speaks the thing he means, which he is never afraid or ashamed to do, because he knows he always means well, and therefore is never obliged to blush, and feel the confusion of finding himself detected in the meanness of a falsehood. He never contrives ill against his neighbors, and therefore is never seen with a lowring, suspicious aspect. A mixture of innocence and wisdom makes him ever seriously cheerful. His generous hospitality to strangers, according to his ability; his goodness, his charity, his courage in the cause of the oppressed, his fidelity in friendship, his humility, his honesty and sincerity, his moderation, and his loyalty to the government, his piety, his temperance, his love to mankind, his magnanimity, his public-spiritedness, and, in fine, his consummate virtue, make him justly deserve to be esteemed the glory of his country.

> The brave do never shun the light,
> Just are their thoughts, and open are their tempers;
> Freely without disguise they love and hate;
> Still are they found in the fair face of day,
> And heaven and men are judges of their actions.—ROWE.

Who would not rather choose, if it were in his choice, to merit the above character, than be the richest, the most learned, or the most powerful man in the province without it?

Almost every man has a strong natural desire of being valued and esteemed by the rest of his species, but I am concerned and grieved to see how few fall into the right and only infallible method of becoming so. That laudable ambition is too commonly misapplied, and often ill employed. Some, to make themselves considerable, pursue learning; others grasp at wealth; some aim at being thought witty; and others are only careful to make the most of a hand-

some person; but what is wit, or wealth, or form, or learning, when compared with virtue? It is true, we love the handsome, we applaud the learned, and we fear the rich and powerful; but we even worship and adore the virtuous. Nor is it strange; since men of virtue are so rare, so very rare to be found. If we were as industrious to become good as to make ourselves great, we should become really great by being good, and the number of valuable men would be much increased; but it is a grand mistake to think of being great without goodness; and I pronounce it as certain, that there was never yet a truly great man, that was not at the same time truly virtuous.

O Cretico! thou sour philosopher! thou cunning statesman! thou art crafty, but far from being wise. When wilt thou be esteemed, regarded, and beloved like Cato? When wilt thou, among thy creatures, meet with that unfeigned respect and warm good-will that all men have for him? Wilt thou never understand, that the cringing, mean, submissive deportment of thy dependants, is (like the worship paid by Indians to the devil) rather through fear of the harm thou mayest do them, than out of gratitude for the favors they have received of thee? Thou art not wholly void of virtue; there are many good things in thee, and many good actions reported of thee. Be advised by thy friend: neglect those musty authors; let them be covered with dust, and moulder on their proper shelves; and do thou apply thyself to a study much more profitable—the knowledge of mankind and thyself.

This is to give notice, that the Busy-Body strictly forbids all persons, from this time forward, of what age, sex, rank, quality, degree, or denomination soever, on any pretence, to inquire who is the author of this paper, on pain of his displeasure (his own near and dear relations only excepted).

It is to be observed, that if any bad characters happen to be drawn in the course of these papers, they mean no particular person, if they are not particularly applied.

Likewise, that the author is no party-man, but a general meddler.

N.B.—Cretico lives in a neighboring province.

THE BUSY-BODY.—NO. IV.

From Tuesday, February 18, *to Tuesday, February* 25, 1728—9.

Nequid nimis.

In my first paper I invited the learned and the ingenious to join with me in this undertaking, and I now repeat that invitation. I would have such gentlemen take this opportunity (by trying their talent in writing) of diverting themselves and friends, and improving the taste of the town. And because I would encourage all wit of our own growth and produce, I hereby promise, that whoever shall send me a little essay on some moral or other subject, that is fit for public view in this manner, (and not basely borrowed from any other author) I shall receive it with candor, and take care to place it to the best advantage. It will be hard if we cannot muster up in the whole country a sufficient stock of sense to supply the Busy-Body at least for a twelvemonth. For my own part, I have already professed, that I have the good of my country wholly at heart in this design, without the least sinister view; my chief purpose being to inculcate the noble principles of virtue, and depreciate vice of every kind. But as I know the mob hate instruction, and the generality would never read beyond the first line of my lectures, if they were actually filled with nothing but wholesome precepts and advice, I must therefore sometimes humor them in their own way. There are a set of great names in the province, who are the common objects of popular dislike. If I can now and then overcome my reluctance, and prevail with myself to satirise a little one of these gentlemen, the expectation of meeting with such a gratification will induce many to read me through, who would otherwise proceed immediately to the foreign news. As I am very well assured the greatest men among us have a sincere love for their country, notwithstanding its ingratitude, and the insinuations of the envious and malicious to the contrary, so I doubt not but they will cheerfully tolerate me in the liberty I design to take for the end above mentioned.

As yet I have but few correspondents, though they begin now to increase. The following letter, left for me at the printer's, is one of the first I have received, which I regard the more for that it comes from one of the fair sex, and because I have myself oftentimes suffered under the grievance therein complained of.

To the Busy-Body.

"Sir,

"You having set yourself up for a *censurer morum*, (as I think you call it) which is said to mean a reformer of manners, I know no person more proper to be applied to for redress in all the grievances we suffer from want of manners in some people. You must know I am a single woman, and keep a shop in this town for a livelihood. There is a certain neighbor of mine, who is really agreeable company enough, and with whom I have had an intimacy of some time standing; but of late she makes her visits so exceedingly often, and stays so very long every visit, that I am tired out of all patience. I have no manner of time at all to myself; and you, who seem to be a wise man, must needs be sensible that every person has little secrets and privacies, that are not proper to be exposed even to the nearest friend. Now I cannot do the least thing in the world, but she must know about it; and it is a wonder I have found an opportunity to write you this letter. My misfortune is, that I respect her very well, and know not how to disoblige her so much as to tell her I should be glad to have less of her company; for if I should once hint such a thing, I am afraid she would resent it so as never to darken my door again. But alas, sir, I have not yet told you half my affliction. She has two children that are just big enough to run about and do pretty mischief: these are continually along with mamma, either in my room or shop, if I have ever so many customers or people with me about business. Sometimes they pull the goods off my low shelves down to the ground, and perhaps where one of them has just been making water. My friend takes up the stuff, and cries, "Oh! thou little wicked mischievous rogue! But, however, it has done no great damage; it is only wet a little:" and so puts it up upon the shelf again. Sometimes they get to my cask of nails behind the counter, and divert themselves, to my great vexation, with mixing my ten-penny, and eight-penny, and four-penny together. I endeavor to conceal my uneasiness as much as possible, and with a grave look go to sorting them out. She cries, "Don't thee trouble thyself, neighbor: let them play a little: I'll put all to rights before I go." But things are never so put to rights but that I find a great deal of work to do after they are gone. Thus, sir, I have all the trouble and pesterment of children, without the pleasure of calling them my own; and they are now so used to being here, that they will be content no where else. If she would have been so kind as to have moderated her visits to ten times a day, and

staid but half an hour at a time, I should have been contented, and I believe never have given you this trouble. But this very morning they have so tormented me that I could bear no longer; for, while the mother was asking me twenty impertinent questions, the youngest got to my nails, and with great delight rattled them by handfuls all over the floor; and the other, at the same time, made such a terrible din upon my counter with a hammer, that I grew half distracted. I was just then about to make myself a new suit of pinners, but in the fret and confusion I cut it quite out of all manner of shape, and utterly spoiled a piece of the first muslin. Pray, sir, tell me what I shall do; and talk a little against such unreasonable visiting in your next paper; though I would not have her affronted with me for a great deal, for sincerely I love her and her children, as well, I think, as a neighbor can, and she buys a great many things in a year at my shop. But I would beg her to consider, that she uses me unmercifully, though I believe it is only for want of thought. But I have twenty things more to tell you besides all this: there is a handsome gentleman that has a mind (I don't question) to make love to me, but he can't get the opportunity to —— O dear, here she comes again; I must conclude,

"Your's, &c. PATIENCE."

Indeed, it is well enough, as it happens, that she is come to shorten this complaint, which I think is full long enough already, and probably would otherwise have been as long again. However, I must confess, I cannot help pitying my correspondent's case; and, in her behalf, exhort the visitor to remember and consider the words of the wise man, "withdraw thy foot from the house of thy neighbor, lest he grow weary of thee, and so hate thee." It is, I believe, a nice thing and very difficult, to regulate our visits in such a manner as never to give offence by coming too seldom, or too often, or departing too abruptly, or staying too long. However, in my opinion, it is safest for most people in a general way, who are unwilling to disoblige, to visit seldom, and tarry but a little while in a place, notwithstanding pressing invitations, which are many times insincere. And though more of your company should be really desired, yet in this case too much reservedness is a fault more easily excused than the contrary.

Men are subject to various inconveniences merely through lack of a small share of courage, which is a quality very necessary in the common occurrences of life, as well as in a battle. How many impertinences do we daily suffer with

great uneasiness, because we have not courage enough to discover our dislike? And why may not a man use the boldness and freedom of telling his friends, that their long visits sometimes incommode him? On this occasion, it may be entertaining to some of my readers, if I acquaint them with the Turkish manner of entertaining visitors, which I have from an author of unquestionable veracity; who assures us, that even the Turks are not so ignorant of civility and the arts of endearment, but that they can practise them with as much exactness as any other nation, whenever they have a mind to show themselves obliging.

"When you visit a person of quality, (says he) and have talked over your business, or the compliments, or whatever concern brought you thither, he makes a sign to have things served in for the entertainment, which is generally a little sweetmeat, a dish of sherbet, and another of coffee; all which are immediately brought in by the servants, and tendered to all the guests in order, with the greatest care and awfulness imaginable. At last comes the finishing part of your entertainment, which is, perfuming the beards of the company; a ceremony which is performed in this manner:—They have for the purpose a small silver chafing dish, covered with a lid full of holes, and fixed upon a handsome plate. In this they put some fresh coals, and upon them a piece of lignum aloes, and shutting it up, the smoke immediately ascends with a grateful odour through the holes of the cover. This smoke is held under every one's chin, and offered as it were a sacrifice to his beard. The bristly idol soon receives the reverence done to it, and so greedily takes in and incorporates the gummy steam, that it retains the savor of it, and may serve for a nosegay a good while after.

"This ceremony may perhaps seem ridiculous at first hearing, but it passes among the Turks for a high gratification. And I will say this in its vindication, that its design is very wise and useful. For it is understood to give a civil dismission to the visitants, intimating to them that the master of the house has business to do, or some other avocations, that permits them to go away as soon as they please; and the sooner after this ceremony the better. By this means you may, at any time, without offence, deliver yourself from being detained from your affairs by tedious and unseasonable visits; and from being constrained to use that piece of hypocrisy, so common in the world, of pressing those to stay longer with you, whom perhaps in your heart you wish a great way off for having troubled you so long already."

Thus far my author. For my own part, I have taken such a fancy to this Turkish custom, that for the future I shall put something like it in practice. I have provided a bottle of right French brandy for the men, and citron water for the ladies. After I have treated with a dram, and presented a pinch of my best snuff, I expect all company will retire, and leave me to pursue my studies for the good of the public.

ADVERTISEMENT.

I give notice, that I am now actually compiling, and design to publish in a short time, the true history of the rise, growth, and progress of the renowned Tiff Club. All persons who are acquainted with any facts, circumstances, characters, transactions, &c. which will be requisite to the perfecting and embellishment of the said work, are desired to communicate the same to the author, and direct their letters to be left with the printer hereof.

The letter signed "*Would-be-something*," is come to hand.

THE BUSY BODY.—No. V.

From Tuesday, February 25, to Tuesday, March 4, 1728—9.

Vos, o patricius sanguis, quos vivere fas est
Occipiti cæco, posticæ occurrite sannæ.—PERSIUS.

This paper being designed for a terror to evil doers, as well as a praise to them that do well, I am lifted up with secret joy to find, that my undertaking is approved, and encouraged by the just and good, and that few are against me but those who have reason to fear me.

There are little follies in the behavior of most men, which their best friends are too tender to acquaint them with; there are little vices and small crimes which the law has no regard to or remedy for: there are likewise great pieces of villany sometimes so craftily accomplished, and so circumspectly guarded, that the law can take no hold of the actors. All these things, and all things of this nature, come within my province as Censor, and I am determined not to be negligent of the trust I have reposed in myself, but resolve to execute my office diligently and faithfully.

And that all the world may judge with how much humanity, as well as justice, I shall behave in this office; and that even my enemies may be convinced

I take no delight to rake into the dunghill lives of vicious men; and to the end that certain persons may be a little eased of their fears, and relieved from the terrible palpitations they have lately felt and suffered, and do still suffer; I hereby graciously pass an act of general oblivion, for all offences, crimes, and misdemeanors of what kind soever, committed from the beginning of the year 1681, until the day of the date of my first paper, and promise only to concern myself with such as have been since and shall hereafter be committed. I shall take no notice who has (heretofore) raised a fortune by fraud and oppression, nor who by deceit and hypocrisy; what woman has been false to her good husband's bed, nor what man has, by barbarous usage or neglect, broken the heart of a faithful wife, and wasted his health and substance in debauchery; what base wretch has betrayed his friend, and sold his honesty for gold, nor what baser wretch first corrupted him, and then bought the bargain: all this, and much more of the same kind, I shall forget, and pass over in silence; but then it is to be observed, that I expect and require a sudden and general amendment.

These threatenings of mine, I hope will have a good effect, and, if regarded, may prevent abundance of folly and wickedness in others, and, at the same time, save me abundance of trouble: and that people may not flatter themselves with the hopes of concealing their loose misdemeanors from my knowledge, and in that view persist in evil doing, I must acquaint them, that I have lately entered into an intimacy with the extraordinary person, who some time since wrote me the following letter; and who, having a wonderful faculty, that enables him to discover the most secret iniquity, is capable of giving me great assistance in my designed work of reformation.

MR. BUSY-BODY,

"I rejoice, Sir, at the opportunity you have given me to be serviceable to you, and, by your means, to this province. You must know, that such have been the circumstances of my life, and such were the marvellous concurrences of my birth, that I have not only a faculty of discovering the actions of persons, that are absent or asleep, but even of the devil himself, in many of his secret workings, in the various shapes, habits, and names of men and women: and having travelled and conversed much, and met but with a very few of the same perceptions and qualifications, I can recommend myself to you as the most useful man you can correspond with. My father's father's father (for we had

no grandfathers in our family) was the same John Bunyan who wrote that memorable book, The Pilgrim's Progress, who had, in some degree, a natural faculty of second sight. This faculty (how derived to him our family memoirs are not very clear) was enjoyed by all his descendants, but not by equal talents. It was very dim in several of my first cousins, and probably had been nearly extinct in our particular branch, had not my father been a traveller. He lived, in his youthful days, in New England. There he married, and there was born my elder brother, who had so much of this faculty, as to discover witches in some of their occult performances. My parents transporting themselves to Great Britain, my second brother's birth was in that kingdom. He shared but a small portion of this virtue, being only able to discern transactions about the time of, and for the most part after, their happening. My good father, who delighted in the Pilgrim's Progress, and mountainous places, took shipping, with his wife, for Scotland, and inhabited in the Highlands, where myself was born: and whether the soil, climate, or astral influences, of which are preserved divers prognostics, restored our ancestor's natural faculty of second sight, in a greater lustre to me, than it had shined in through several generations, I will not here discuss. But so it is, that I am possessed largely of it, and design, if you encourage the proposal, to take this opportunity of doing good with it, which I question not will be accepted of in a grateful way by many of your honest readers, though the discovery of my extraction bodes me no deference from your great scholars and modern philosophers. This my father was long ago aware of; and lest the name alone should hurt the fortunes of his children, he, in his shiftings from one country to another, wisely changed it.

"Sir, I have only this further to say, how I may be useful to you, and as a reason for my not making myself more known in the world: by virtue of this great gift of nature, second-sightedness, I do continually see numbers of men, women, and children, of all ranks, and what they are doing, while I am sitting in my closet; which is too great a burden for the mind, and makes me also conceit, even against reason, that all this host of people can see and observe me, which strongly inclines me to solitude, and an obscure living; and, on the other hand, it will be an ease to me to disburthen my thoughts and observations in the way proposed to you, by Sir, your friend and humble servant."

I conceal this correspondent's name, in my care for his life and safety, and cannot but approve his prudence, in choosing to live obscurely. I remember the fate of my poor monkey: he had an ill-natured trick of grinning and chattering at every thing he saw in petticoats: my ignorant country neighbors got a notion, that pug snarled by instinct at every female who had lost her virginity. This was no sooner generally believed, than he was condemned to death: by whom I could never learn, but he was assassinated in the night, barbarously stabbed and mangled in a thousand places, and left hanging dead on one of my gate posts, where I found him the next morning.

The Censor observing, that the itch of scribbling begins to spread exceedingly, and being carefully tender of the reputation of his country, in point of wit and good sense, has determined to take all manner of writing in verse or prose, that pretend to either, under his immediate cognizance; and accordingly, hereby prohibits the publishing any such for the future, till they have first passed his examination, and received his imprimatur: for which he demands as a fee only sixpence per sheet.

N. B. He nevertheless permits to be published, all satirical remarks on the Busy-Body, the above prohibition notwithstanding, and without examination, or requiring the said fees; which indulgence, the small wits in and about this city are advised gratefully to accept and acknowledge.

The gentleman, who calls himself Sirronio, is directed, on receipt of this, to burn his great book of Crudities.

P. S. In compassion to that young man, on account of the great pains he has taken, in consideration of the character I have just received of him, that he is really good-natured, and on condition he shows it to no foreigner, or stranger of sense, I have thought fit to reprieve his said great book of Crudities from the flames, till further order.

Noli me tangere.

I had resolved, when I first commenced this design, on no account to enter into a public dispute with any man; for I judged it would be equally unpleasant to me and my readers, to see this paper filled with contentious wrangling, answers, replies, &c. which is a way of writing that is endless, and, at the same time, seldom contains any thing that is either edifying or entertaining. Yet, when such a considerable man as Mr. —— finds himself concerned so

warmly to accuse and condemn me, as he has done in Keimer's last Instructor; I cannot forbear endeavoring to say something in my own defence, from one of the worst of characters that could be given me by a man of worth. But as I have many things of more consequence to offer the public, I declare, that I will never, after this time, take notice of any accusations, not better supported with truth and reason; much less may every little scribbler, that shall attack me, expect an answer from the Busy-Body.

The sum of the charge delivered against me, either directly or indirectly, in the said paper, is this: not to mention the first weighty sentence concerning vanity and ill-nature, and the shrewd intimation, that I am without charity, and therefore can have no pretence to religion, I am represented as guilty of defamation and scandal, the odiousness of which is apparent to every good man, and the practice of it opposite to Christianity, morality, and common justice, and, in some cases, so far below all these, as to be inhuman; as a blaster of reputations; as attempting, by a pretence, to screen myself from the imputation of malice and prejudice; as using a weapon, which the wiser and better part of mankind hold in abhorrence; and as giving treatment which the wiser and better part of mankind dislike on the same principles, and for the same reason, as they do assassination, &c.; and all this is inferred and concluded from a character I have written in my Number III.

In order to examine the justice and truth of this heavy charge, let us recur to that character. And here we may be surprised to find what a trifle has raised this mighty clamor and complaint, this grievous accusation!—The worst thing said of the person, in what is called my gross description (be he who he will to whom my accuser has applied the character of Cretico), is, that he is a sour philosopher, crafty, but not wise. Few human characters can be drawn that will not fit somebody, in so large a country as this; but one would think, supposing I meant Cretico a real person, I had sufficiently manifested my impartiality, when I said, in that very paragraph, that Cretico is not without virtue; that there are many good things in him, and many good actions reported of him; which must be allowed, in all reason, very much to overbalance in his favor those worst words, sour-tempered, and cunning. Nay, my very enemy and accuser must have been sensible of this, when he freely acknowledges, that he has been seriously considering, and cannot yet determine, which he would choose to be, the Cato or Cretico of that paper; since my Cato is one of the best of characters. Thus much in my own vindication. As to the only reasons there

given, why I ought not to continue drawing characters, viz. Why should any man's picture be published which he never sat for; or his good name taken from him any more than his money or possessions, at the arbitrary will of another, &c.? I have but this to answer; the money or possessions, I presume, are nothing to the purpose, since no man can claim a right either to those or a good name, if he has acted so as to forfeit them. And are not the public the only judges what share of reputation they think proper to allow any man? Supposing I was capable, and had an inclination to draw all the good and bad characters in America, why should a good man be offended with me for drawing good characters? And if I draw ill ones, can they fit any but those that deserve them? And ought any but such to be concerned that they have their deserts? I have as great an aversion and abhorrence for defamation and scandal as any man, and would with the utmost care avoid being guilty of such base things; besides, I am very sensible and certain, that if I should make use of this paper to defame any person, my reputation would be sooner hurt by it than his, and the Busy-Body would quickly become detestable; because, in such a case, as is justly observed, the pleasure arising from a tale of wit and novelty soon dies away in generous and honest minds, and is followed with a secret grief to see their neighbors calumniated. But if I myself was actually the worst man in the province, and any one should draw my true character, would it not be ridiculous in me to say he had defamed and scandalised me, unless he had added in a matter of truth? If any thing is meant by asking, why any man's picture should be published which he never sat for? it must be, that we should give no character without the owner's consent. If I discern the wolf disguised in harmless wool, and contriving the destruction of my neighbor's sheep, must I have his permission before I am allowed to discover and prevent him? If I know a man to be a designing knave, must I ask his consent to bid my friends beware of him? If so, then, by the same rule, supposing the Busy-Body had really merited all his enemy had charged him with, his consent likewise ought to have been obtained before so terrible an accusation was published against him.

I shall conclude with observing, that in the last paragraph save one of the piece now examined, much ill-nature and some good sense are co-inhabitants (as he expresses it). The ill-nature appears in his endeavoring to discover satire where I intended no such thing, but quite the reverse; the good sense is this, that drawing too good a character of any one is a refined manner of satire

that may be as injurious to him as the contrary, by bringing on an examination that undresses the person, and in the haste of doing it, he may happen to be stript of what he really owns and deserves. As I am Censor, I might punish the first, but I forgive it. Yet I will not leave the latter unrewarded; but assure my adversary, that in consideration of the merit of those four lines, I am resolved to forbear injuring him on any account in that refined manner.

I thank my neighbor P—— W——l for his kind letter.

The lions complained of shall be muzzled.

THE BUSY-BODY.—NO. VIII.

From Tuesday, March 20, to Tuesday, March 27, 1729.

Quid non mortalia pectora cogis,
Auri sacra fames? VIRGIL.

ONE of the greatest pleasures an author can have, is certainly the hearing his works applauded. The hiding from the world our names while we publish our thoughts, is so absolutely necessary to this self-gratification, that I hope my well-wishers will congratulate me on my escape from the many diligent but fruitless inquiries that have of late been made after me. Every man will own, that an author, as such, ought to be hid by the merit of his productions only; but pride, party, and prejudice, at this time run so very high, that experience shows we form our notions of a piece by the character of the author. Nay, there are some very humble politicians in and about this city, who will ask on which side the writer is, before they presume to give their opinion of the thing wrote. This ungenerous way of proceeding I was well aware of before I published my first speculation, and therefore concealed my name. And I appeal to the more generous part of the world, if I have, since I appeared in the character of the Busy-Body, given an instance of my siding with any party more than another, in the unhappy divisions of my country; and I have, above all, this satisfaction in myself, that neither affection, aversion, or interest, have biassed me to use any partiality towards any man, or set of men: but whatsoever I find nonsensical, ridiculous, or immorally dishonest I have, and shall continue openly to attack, with the freedom of an honest man and a lover of my country.

I profess I can hardly contain myself, or preserve the gravity and dignity that should attend the censorial office, when I hear the odd and unaccountable expositions that are put upon some of my works, through the malicious ignorance of some, and the vain pride of more than ordinary penetration in others; one instance of which many of my readers are acquainted with. A certain gentleman has taken a great deal of pains to write a key to the letter in my Number IV., wherein he has ingeniously converted a gentle satire upon tedious and impertinent visitants, into a libel on some of the government. This I mention only as a specimen of the taste of the gentleman I am, forsooth, bound to please in my speculations; not that I suppose my impartiality will ever be called in question on that account. Injustices of this nature I could complain of in many instances; but I am at present diverted by the reception of a letter, which, though it regards me only in my private capacity as an adept, yet I venture to publish it for the entertainment of my readers.

To Censor Morum, Esq. Busy-Body General of the Province of Pennsylvania, and the Counties of Newcastle, Kent, and Sussex upon Delaware.

HONORABLE SIR,

I JUDGE by your lucubrations, that you are not only a lover of truth and equity, but a man of parts and learning and a master of science; as such I honor you. Know, then, most profound sir, that I have, from my youth up, been a very indefatigable student in and admirer of that divine science, astrology. I have read over Scot, Albertus Magnus, and Cornelius Agrippa, above three hundred times; and was in hopes, by my knowledge and industry, to gain enough to have recompensed me for my money expended and time lost in the pursuit of this learning. You cannot be ignorant, sir, (for your intimate second-sighted correspondent knows all things) that there are large sums of money hidden under ground in divers places about this town, and in many parts of the country: but alas, sir, notwithstanding I have used all the means laid down in the immortal authors before mentioned, and when they failed, the ingenious Mr. P—d—l, with his mercurial wand and magnet, I have still failed in my purpose. This therefore I send, to propose and desire an acquaintance with you; and I do not doubt, notwithstanding my repeated ill-fortune, but we may be exceedingly serviceable to each other in our discoveries; and that if we use our united endeavors, the time will come when the Busy-Body, his second-sighted correspondent, and your very humble servant, will be three of

the richest men in the province: and then, sir, what may we not do? A word to the wise is sufficient. I conclude, with all demonstrable respect, your's and Urania's votary, TITAN PLEIADES.

In the evening, after I had received this letter, I made a visit to my second-sighted friend, and communicated to him the proposal. When he had read it, he assured me, that to his certain knowledge, there is not at this time so much as one ounce of silver or gold hid under ground in any part of this province; for that the late and present scarcity of money had obliged those who were living, and knew where they had formerly hid any, to take it up, and use it in their own necessary affairs; and as to all the rest which was buried by pirates and others in old times, who were never like to come for it, he himself had dug it all up and applied it to charitable uses; and this he desired me to publish for the general good. For, as he acquainted me, there are among us great numbers of honest artificers and laboring people, who, fed with a vain hope of growing suddenly rich, neglect their business, almost to the ruining of themselves and families, and voluntarily endure abundance of fatigue in a fruitless search after imaginary hidden treasure. They wander through the woods and bushes by day, to discover the marks and signs; at midnight they repair to the hopeful spots with spades and pickaxes: full of expectation, they labor violently, trembling at the same time in every joint, through fear of certain malicious demons who are said to haunt and guard such places. At length a mighty hole is dug, and perhaps several cartloads of earth thrown out; but alas, no cag or iron pot is found! no seaman's chest crammed with Spanish pistoles, or weighty pieces of eight! Then they conclude, that through some mistake in the procedure, some rash word spoke, or some rule of art neglected, the guardian spirit had power to sink it deeper into the earth, and convey it out of their reach. Yet, when a man is once thus infatuated, he is so far from being discouraged by ill success, that he is rather animated to double his industry, and will try again and again in a hundred different places, in hopes at last of meeting with some lucky hit, that shall at once sufficiently reward him for all his expense of time and labor.

This odd humor of digging for money, through a belief that much has been hid by pirates formerly frequenting the river, has for several years been mighty prevalent among us; insomuch that you can hardly walk half a mile out of the town on any side, without observing several pits dug with that design, and

perhaps some lately opened. Men, otherwise of very good sense, have been drawn into this practice through an overweening desire of sudden wealth, and an easy credulity of what they so earnestly wished might be true. While the rational and almost certain methods of acquiring riches by industry and frugality, are neglected or forgotten. There seems to be some peculiar charm in the conceit of finding money; and if the sands of Schuylkil were so much mixed with small grains of gold, that a man might in a day's time, with care and application, get together to the value of half a crown, I make no question but we should find several people employed there, that can with ease earn five shillings a day at their proper trades.

Many are the idle stories told of the private success of some people, by which others are encouraged to proceed; and the astrologers, with whom the country swarms at this time, are either in the belief of these things themselves, or find their advantage in persuading others to believe them; for they are often consulted about the critical times for digging, the methods of laying the spirit, and the like whimsies, which renders them very necessary to, and very much caressed by, the poor deluded money-hunters.

There is certainly something very bewitching in the pursuit after mines of gold and silver and other valuable metals, and many have been ruined by it. A sea-captain of my acquaintance used to blame the English for envying Spain their mines of silver, and too much despising or overlooking the advantages of their own industry and manufactures. "For my part," says he, "I esteem the banks of Newfoundland to be a more valuable possession than the mountains of Potosi; and when I have been there on the fishing account, have looked upon every cod pulled up into the vessel as a certain quantity of silver ore, which required only carrying to the next Spanish port to be coined into pieces of eight;" not to mention the national profit of fitting out and employing such a number of ships and seamen. Let honest Peter Buckram, who has long without success been a searcher after hidden money, reflect on this, and be reclaimed from that unaccountable folly. Let him consider, that every stitch he takes when he is on his shop-board, is picking up part of a grain of gold, that will in a few days' time amount to a pistole; and let Faber think the same of every nail he drives, or every stroke with his plane. Such thoughts may make them industrious, and in consequence, in time they may be wealthy: but how absurd is it to neglect a certain profit for such a ridiculous whimsey! to spend whole days at the George, in company with an idle pretender to astrology,

contriving schemes to discover what was never hidden, and forgetful how carelessly business is managed at home in their absence; to leave their wives and a warm bed at midnight (no matter if it rain, hail, snow, or blow a hurricane, provided that be the critical hour) and fatigue themselves with the violent exercise of digging for what they shall never find, and perhaps getting a cold that may cost their lives, or at least disordering themselves so as to be fit for no business beside for some days after. Surely this is nothing less than the most egregious folly and madness.

I shall conclude with the words of my discreet friend Agricola, of Chester county, when he gave his son a good plantation:—"My son," said he, "I give thee now a valuable parcel of land; I assure thee I have found a considerable quantity of gold by digging there; thee mayst do the same; but thee must carefully observe this, *Never to dig more than plow-deep.*"

[*The foregoing are the only Numbers of the* BUSY-BODY *ascertained to be from the pen of Franklin; they were written when he was about* 23 *years of age.*]

DIALOGUE BETWEEN PHILOCLES AND HORATIO, MEETING ACCIDENTALLY IN THE FIELDS, CONCERNING VIRTUE AND PLEASURE.

From the Pennsylvania Gazette, No. 84, *June* 23, 1730.[1]

Philocles. MY friend Horatio! I am very glad to see you; prithee how came such a man as you alone? and musing too? What misfortune in your pleasures has sent you to philosophy for relief?

Horatio. You guess very right, my dear Philocles: we pleasure-hunters are never without them; and yet, so enchanting is the game, we cannot quit the chace. How calm and undisturbed is your life! how free from present embarrassments and future cares! I know you love me, and look with compassion upon my conduct; show me then the path which leads up to that constant and invariable good, which I have heard you so beautifully describe, and which you seem so fully to possess.

---

[1] This and the seven Essays following, have never before been published in Europe. They are taken from an American collection; the editor of which fully ascertained their authenticity.

Phil. There are few men in the world I value more than you, Horatio! for amidst all your foibles and painful pursuits of pleasure, I have oft observed in you an honest heart, and a mind strongly bent towards virtue. I wish, from my soul, I could assist you in acting steadily the part of a reasonable creature; for, if you would not think it a paradox, I should tell you I love you better than you do yourself.

Hor. A paradox indeed! better than I do myself! when I love my dear self so well, that I love every thing else for my own sake.

Phil. He only loves himself well, who rightly and judiciously loves himself.

Hor. What do you mean by that, Philocles? You men of reason and virtue are always dealing in mysteries, though you laugh at them when the church makes them. I think he loves himself very well and very judiciously too, as you call it, who allows himself to do whatever he pleases.

Phil. What, though it be to the ruin and destruction of that very self which he loves so well? That man alone loves himself rightly, who procures the greatest possible good to himself through the whole of his existence; and so pursues pleasure as not to give for it more than it is worth.

Hor. That depends all upon opinion. Who shall judge what the pleasure is worth? Suppose a pleasing form of the fair kind strikes me so much, that I can enjoy nothing without the enjoyment of that one object: or, that pleasure in general is so favorite a mistress, that I will take her as men do their wives, for better, for worse; minding no consequences, nor regarding what is to come. Why should I not do it?

Phil. Suppose, Horatio, that a friend of yours entered into the world about two-and-twenty, with a healthful vigorous body, and a fair plentiful estate of about five hundred pounds a-year; and yet, before he had reached thirty, should, by following his own pleasures, and not as you, duly regarding consequences, have run out of his estate, and disabled his body to that degree, that he had neither the means nor capacity of enjoyment left, nor any thing else to do but wisely shoot himself through the head to be at rest; what would you say to this unfortunate man's conduct? Is it wrong by opinion or fancy only? or is there really a right and wrong in the case? is not one opinion of life and action juster than another? or one sort of conduct preferable to another? or does that miserable son of pleasure appear as reasonable and lovely a being in your eyes as a man who, by prudently and rightly gratifying his natural passions, had preserved his body in full health, and his estate entire, and enjoyed

both to a good old age, and then died with a thankful heart for the good things he had received, and with an entire submission to the will of Him who first called him into being? Say, Horatio, are these men equally wise and happy? And is every thing to be measured by mere fancy and opinion, without considering whether that fancy or opinion be right?

Hor. Hardly so neither, I think; yet sure the wise and good Author of nature could never make us to plague us. He could never give us passions, on purpose to subdue and conquer them; nor produce this self of mine, or any other self, only that it may be denied; for that is denying the works of the great Creator himself. Self-denial, then, which is what I suppose you mean by prudence, seems to me not only absurd, but very dishonorable to that supreme wisdom and goodness which is supposed to make so ridiculous and contradictory a creature, that must be always fighting with himself in order to be at rest, and undergo voluntary hardships in order to be happy: are we created sick, only to be commanded to be sound? Are we born under one law, our passions, and yet bound to another, that of reason? Answer me, Philocles, for I am warmly concerned for the honor of nature, the mother of us all.

Phil. I find, Horatio, my two characters have affrighted you; so that you decline the trial of what is good, by reason; and had rather make a bold attack upon Providence, the usual way of you gentlemen of fashion, who, when by living in defiance of the eternal rules of reason, you have plunged yourselves into a thousand difficulties, endeavor to make yourselves easy by throwing the burden upon nature: you are, Horatio, in a very miserable condition indeed; for you say you cannot be happy if you control your passions; and you feel yourself miserable by an unrestrained gratification of them; so that here is evil, irremediable evil, either way.

Hor. That is very true, at least it appears so to me; pray what have you to say, Philocles, in honor of Nature or Providence? methinks I am in pain for her: how do you rescue her, poor lady?

Phil. This, my dear Horatio, I have to say; that what you find fault with and clamor against, as the most terrible evil in the world, self-denial, is really the greatest good, and the highest self-gratification: if indeed you use the word in the sense of some weak moralists, and much weaker divines, you will have just reason to laugh at it; but if you take it, as understood by philosophers and men of sense, you will presently see her charms, and fly to her embraces, notwithstanding her demure looks, as absolutely necessary to produce even your own

darling sole good, pleasure: for, self-denial is never a duty, or a reasonable action, but as it is a natural means of procuring more pleasure than you can taste without it; so that this grave saint-like guide to happiness, as rough and dreadful as she has been made to appear, is in truth the kindest and most beautiful mistress in the world.

Hor. Prithee, Philocles, do not wrap yourself in allegory and metaphor: why do you teaze me thus? I long to be satisfied, what is this philosophical self-denial; the necessity and reason of it; I am impatient, and all on fire: explain therefore, in your beautiful natural easy way of reasoning, what I am to understand by this grave lady of yours, with so forbidding down-cast looks, and yet so absolutely necessary to my pleasures; I stand to embrace her, for you know, pleasure I court under all shapes and forms.

Phil. Attend, then, and you will see the reason of this philosophical self-denial. There can be no absolute perfection in any creature; because every creature is derived from something of a superior existence, and dependent on that source for its own existence: no created being can be all-wise, all-good, and all-powerful, because his powers and capacities are finite and limited; consequently whatever is created must, in its own nature, be subject to error, irregularity, excess, and imperfectness. All intelligent rational agents find in themselves a power of judging what kind of beings they are, what actions are proper to preserve them, and what consequences will generally attend them, what pleasures they are for, and to what degree their natures are capable of receiving them. All we have to do then, Horatio, is to consider, when we are surprised with a new object, and passionately desire to enjoy it, whether the gratifying that passion be consistent with the gratifying other passions and appetites equal, if not more necessary to us. And whether it consists with our happiness to-morrow, next week, or next year; for as we all wish to live, we are obliged by reason, to take as much care for our future, as our present happiness, and not build one upon the ruins of the other: but if through the strength and power of a present passion, and through want of attending to consequences, we have erred and exceeded the bounds which nature or reason have set us; we are then, for our own sakes, to refrain, or deny ourselves a present momentary pleasure for a future, constant, and durable one: so that this philosophical self-denial is only refusing to do an action which you strongly desire; because it is inconsistent with health, convenience, or circumstances in the world: or in other words, because it would cost you more than it was worth. You would lose by it, as a man of

pleasure. Thus you see, Horatio, that self-denial is not only the most reasonable, but the most pleasant thing in the world.

Hor. We are just coming into town, so that we cannot pursue this argument any farther at present; you have said a great deal for nature, Providence, and reason: happy are they who can follow such divine guides.

Phil. Horatio, good night; I wish you wise in your pleasures.

Hor. I wish, Philocles, I could be as wise in my pleasures as you are pleasantly wise; your wisdom is agreeable, your virtue is amiable, and your philosophy the highest luxury. Adieu, thou enchanting reasoner!

A SECOND DIALOGUE BETWEEN PHILOCLES AND HORATIO, CONCERNING VIRTUE AND PLEASURE.

From the Pennsylvania Gazette, No. 86, *July* 9, 1730.

Philocles. Dear Horatio, where hast thou been these three or four months? What new adventures have you fallen upon since I met you in these delightful all-inspiring fields, and wondered how such a pleasure-hunter as you could bear being alone?

Horatio. O Philocles! thou best of friends, because a friend to reason and virtue! I am very glad to see you. Do not you remember, I told you then, that some misfortunes in my pleasures had sent me to philosophy for relief? but now I do assure you I can, without a sigh, leave other pleasures for those of philosophy: I can hear the word reason mentioned, and virtue praised, without laughing. Do not I bid fair for conversion, think you?

Phil. Very fair, Horatio; for I remember the time when reason, virtue, and pleasure, were the same thing with you: when you counted nothing good but what pleased, nor any thing reasonable but what you gained by: when you made a jest of a mind, and the pleasures of reflection; and elegantly placed your sole happiness, like the rest of the animal creation, in the gratification of sense.

Hor. I did so: but in our last conversation, when walking upon the brow of this hill, and looking down on that broad rapid river, and yon widely extended beautifully varied plain, you taught me another doctrine: you showed me, that self-denial, which above all things I abhorred, was really the greatest good, and

the highest self-gratification, and absolutely necessary to produce even my own darling sole good, pleasure.

Phil. True: I told you that self-denial was never a duty, but when it was a natural means of procuring more pleasure than we could taste without it: that as we all strongly desire to live, and to live only to enjoy, we should take as much care about our future as our present happiness, and not build one upon the ruins of the other: that we should look to the end, and regard consequences: and if through want of attention we had erred, and exceeded the bounds which nature had set us, we were then obliged, for our own sakes, to refrain or deny ourselves a present momentary pleasure for a future, constant, and durable good.

Hor. You have shown, Philocles, that self-denial, which weak or interested men have rendered the most forbidding, is really the most delightful and amiable, the most reasonable and pleasant thing in the world. In a word, if I understand you aright, self-denial is, in truth, self-recognising, self-acknowledging, or self-owning. But now, my friend, you are to perform another promise, and show me the path that leads up to that constant, durable, and invariable good, which I have heard you so beautifully describe, and which you seem so fully to possess. Is not this good of yours a mere chimera? Can any thing be constant in a world which is eternally changing, and which appears to exist by an everlasting revolution of one thing into another, and where every thing without us, and every thing within us, is in perpetual motion? What is this constant durable good, then, of yours? Prithee satisfy my soul, for I am all on fire, and impatient to enjoy her. Produce this eternal blooming goddess with never-fading charms, and see whether I will not embrace her with as much eagerness and rapture as you.

Phil. You seem enthusiastically warm, Horatio; I will wait till you are cool enough to attend to the sober dispassionate voice of reason.

Hor. You mistake me, my dear Philocles; my warmth is not so great as to run away with my reason: it is only just raised enough to open my faculties, and fit them to receive those eternal truths, and that durable good, which you so triumphantly boasted of. Begin, then; I am prepared.

Phil. I will. I believe, Horatio, with all your scepticism about you, you will allow that good to be constant which is never absent from you, and that to be durable which never ends but with your being.

Hor. Yes, go on.

Phil. That can never be the good of a creature, which, when present, the creature may be miserable, and when absent, is certainly so.

Hor. I think not; but pray explain what you mean; for I am not much used to this abstract way of reasoning.

Phil. I mean all the pleasures of sense. The good of man cannot consist in the mere pleasures of sense; because, when any one of those objects which you love is absent, or cannot be come at, you are certainly miserable: and if the faculty be impaired, though the object be present, you cannot enjoy it. So that this sensual good depends upon a thousand things without and within you, and all out of your power. Can this then be the good of man? Say, Horatio, what think you, is not this a chequered, fleeting, fantastical good? Can that, in any propriety of speech, be called the good of man which, even while he is tasting, he may be miserable; and which, when he cannot taste, he is necessarily so? Can that be our good which costs us a great deal of pains to obtain, which cloys in possessing, for which we cannot wait the return of appetite before we can enjoy again? Or is that our good which we can come at without difficulty, which is heightened by possession, which never ends in weariness and disappointment, and which, the more we enjoy, the better qualified we are to enjoy on?

Hor. The latter, I think; but why do you torment me thus? Philocles, show me this good immediately.

Phil. I have showed you what it is not; it is not sensual, but it is rational and moral good. It is doing all the good we can to others, by acts of humanity, friendship, generosity, and benevolence: this is that constant and durable good, which will afford contentment and satisfaction always alike, without variation or diminution. I speak to your experience now, Horatio: did you ever find yourself weary of relieving the miserable? or of raising the distressed into life or happiness? or rather, do not you find the pleasure grow upon you by repetition, and that it is greater in the reflection than in the act itself? Is there a pleasure upon earth to be compared with that which arises from the sense of making others happy? Can this pleasure ever be absent, or ever end but with your being? Does it not always accompany you? Doth not it lie down and rise with you, live as long as you live, give you consolation in the hour of death, and remain with you when all other things are going to forsake you, or you them?

Hor. How glowingly you paint, Philocles: methinks Horatio is amongst the

enthusiasts. I feel the passion: I am enchantingly convinced; but I do not know why: overborne by something stronger than reason. Sure some divinity speaks within me: but prithee, Philocles, give me the cause, why this rational and moral good so infinitely excels the mere natural or sensual.

Phil. I think, Horatio, that I have clearly shown you the difference between merely natural or sensual good, and rational or moral good. Natural or sensual pleasure continues no longer than the action itself; but this divine or moral pleasure continues when the action is over, and swells and grows upon your hand by reflection: the one is inconstant, unsatisfying, of short duration, and attended with numberless ills; the other is constant, yields full satisfaction, is durable, and no evils preceding, accompanying, or following it. But if you inquire farther into the cause of this difference, and would know why the moral pleasures are greater than the sensual, perhaps the reason is the same as in all other creatures, that their happiness or chief good consists in acting up to their chief faculty, or that faculty which distinguishes them from all creatures of a different species. The chief faculty in man is his reason, and consequently his chief good; or, that which may be justly called his good, consists not merely in action, but in reasonable action. By reasonable actions, we understand those actions which are preservative of the human kind, and naturally tend to produce real and unmixed happiness; and these actions, by way of distinction, we call actions morally good.

Hor. You speak very clearly, Philocles; but, that no difficulty may remain on my mind, pray tell me what is the real difference between natural good and evil, and moral good and evil? for I know several people who use the terms without ideas.

Phil. That may be: the difference lies only in this; that natural good and evil are pleasure and pain; moral good and evil are pleasure or pain produced with intention and design: for it is the intention only that makes the agent morally good or bad.

Hor. But may not a man, with a very good intention, do an evil action?

Phil. Yes; but then he errs in his judgment, though his design be good: if his error is inevitable, or such as, all things considered, he could not help, he is inculpable; but, if it arose through want of diligence in forming his judgment about the nature of human actions, he is immoral and culpable.

Hor. I find, then, that in order to please ourselves rightly, or to do good to others morally, we should take great care of our opinions.

Phil. Nothing concerns you more; for, as the happiness or real good of men consists in right action, and right action cannot be produced without right opinion, it behoves us, above all things in this world, to take care that our own opinions of things be according to the nature of things. The foundation of all virtue and happiness is thinking rightly. He who sees an action is right, that is, naturally tending to good, and does it because of that tendency, he only is a moral man; and he alone is capable of that constant, durable, and invariable good, which has been the subject of this conversation.

Hor. How, my dear philosophical guide, shall I be able to know, and determine certainly, what is right and wrong in life?

Phil. As easily as you distinguish a circle from a square, or light from darkness. Look, Horatio, into the sacred book of nature; read your own nature, and view the relation which other men stand in to you, and you to them, and you will immediately see what constitutes human happiness, and consequently, what is right.

Hor. We are just coming into town, and can say no more at present. You are my good genius, Philocles; you have showed me what is good; you have redeemed me from the slavery and misery of folly and vice, and made me a free and happy being.

Phil. Then I am the happiest man in the world: be you steady, Horatio: never depart from reason and virtue.

Hor. Sooner will I lose my existence. Good night, Philocles.

Phil. Adieu, dear Horatio!

PUBLIC MEN.

From the Pennsylvania Gazette, No. 95, September 3, 1730.

The following is a dialogue between Socrates, the great Athenian philosopher, and one Glaucon, a private man, of mean abilities, but ambitious of being chosen a senator, and of governing the republic; wherein Socrates, in a pleasant manner, convinces him of his incapacity for public affairs, by making him sensible of his ignorance of the interests of his country, in their several branches, and entirely dissuades him from any attempt of that nature. There is also added, at the end, part of another dialogue the same Socrates had with one Charmidas, a worthy man, but too modest, wherein he endeavors to persuade him to put

himself forward and undertake public business, as being very capable of it. The whole is taken from Xenophon's Memorable Things of Socrates, lib. 3.

A certain man, whose name was Glaucon, the son of Ariston, had so fixed it in his mind to govern the republic, that he frequently presented himself before the people to discourse of affairs of state, though all the world laughed at him for it; nor was it in the power of his relations or friends to dissuade him from that design. But Socrates had a kindness for him, on account of Plato, his brother, and he only it was who made him change his resolution: he met him, and accosted him in so winning a manner, that he first obliged him to hearken to his discourse. He began with him thus: You have a mind then to govern the republic? I have so, answered Glaucon. You cannot, replied Socrates, have a more noble design; for if you can accomplish it so as to become absolute, you will be able to serve your friends, you will raise your family, you will extend the bounds of your country, you will be known, not only in Athens, but through all Greece, and perhaps your renown will fly even to the barbarous nations, as did that of Themistocles. In short, wherever you come, you will have the respect and admiration of all the world. These words soothed Glaucon, and won him to give ear to Socrates, who went on in this manner. But it is certain, that if you desire to be honored, you must be useful to the state. Certainly, said Glaucon. And in the name of all the gods, replied Socrates, tell me what is the first service that you intend to render the state? Glaucon was considering what to answer, when Socrates continued: If you design to make the fortune of one of your friends, you will endeavor to make him rich, and thus perhaps you will make it your business to enrich the republic? I would, answered Glaucon. Socrates replied: would not the way to enrich the republic be to increase its revenue? It is very likely it would, answered Glaucon. Tell me then in what consists the revenue of the state, and to how much it may amount? I presume you have particularly studied this matter, to the end that if any thing should be lost on one hand, you might know where to make it good on another, and that if a fund should fail on a sudden you might immediately be able to settle another in its place? I protest, answered Glaucon, I have never thought of this. Tell me at least the expenses of the republic, for no doubt you intend to retrench the superfluous? I never thought of this either, said Glaucon. You were best then to put off to another time your design of enriching the republic, which you can never be able to do while you are ignorant both of its expenses and revenue. There is another

way to enrich a state, said Glaucon, of which you take no notice, and that is by the ruin of its enemies. You are in the right, answered Socrates; but to this end it is necessary to be stronger than they, otherwise we shall run the hazard of losing what we have: he therefore who talks of undertaking a war, ought to know the strength on both sides, to the end that if his party be the stronger he may boldly advise for war, and that if it be the weaker he may dissuade the people from engaging themselves in so dangerous an enterprise. All this is true. Tell me, then, continued Socrates, how strong our forces are by sea and land, and how strong are our enemies? Indeed, said Glaucon, I cannot tell you on a sudden. If you have a list of them in writing, pray show it me, I should be glad to hear it read. I have it not yet. I see, then, said Socrates, that we shall not engage in war so soon; for the greatness of the undertaking will hinder you from maturely weighing all the consequences of it in the beginning of your government. But, continued he, you have thought of the defence of the country; you know what garrisons are necessary, and what are not; you know what number of troops is sufficient in one, and not sufficient in another; you will cause the necessary garrisons to be reinforced, and will disband those that are useless? I should be of opinion, said Glaucon, to leave none of them on foot, because they ruin a country on pretence of defending it. But, Socrates objected, if all the garrisons were taken away, there would be nothing to hinder the first comer from carrying off what he pleased: but how come you to know that the garrisons behave themselves so ill? Have you been upon the place? have you seen them? Not at all: but I suspect it to be so. When therefore we are certain of it, said Socrates, and can speak upon better grounds than simple conjectures, we will propose this advice to the senate. It may be well to do so, said Glaucon. It comes into my mind, too, continued Socrates, that you have never been at the mines of silver, to examine why they bring not in so much now as they did formerly. You say true, I have never been there. Indeed they say the place is very unhealthy, and that may excuse you. You rally me now, said Glaucon. Socrates added, but I believe you have at least observed how much corn our lands produce, how long it will serve to supply our city, and how much more we shall want for the whole year; to the end you may not be surprised with a scarcity of bread, but may give timely orders for the necessary provisions. There is a deal to do, said Glaucon, if we must take care of all these things. There is so, replied Socrates, and it is even impossible to manage our own families well, unless we know all that is wanting, and take care to provide it.

As you see therefore that our city is composed of above ten thousand families, and it being a difficult task to watch over them all at once, why did you not first try to retrieve your uncle's affairs, which are running to decay, and after having given that proof of your industry, you might have taken a greater trust upon you? But now, when you find yourself incapable of aiding a private man, how can you think of behaving yourself so as to be useful to a whole people? Ought a man who has not strength enough to carry a hundred pound weight, to undertake to carry a heavier burden? I would have done good service to my uncle, said Glaucon, if he would have taken my advice. How, replied Socrates, have you not hitherto been able to govern the mind of your uncle, and do you now believe yourself able to govern the minds of all the Athenians, and his among the rest? Take heed, my dear Glaucon, take heed lest too great a desire of power should render you despised: consider how dangerous it is to speak and entertain ourselves concerning things we do not understand: what a figure do those forward and rash people make in the world who do so; and judge yourself, whether they acquire more esteem than blame, whether they are more admired than contemned. Think, on the contrary, with how much honor a man is regarded who understands perfectly what he says and what he does, and then you will confess that renown and applause have always been the recompense of true merit, and shame the reward of ignorance and temerity. If therefore you would be honored, endeavor to be a man of true merit; and if you enter upon the government of the republic, with a mind more sagacious than usual, I shall not wonder if you succeed in all your designs.

Thus Socrates put a stop to the disorderly ambition of this man: but on an occasion quite contrary, he in the following manner exhorted Charmidas to take an employment. He was a man of sense, and more deserving than most others in the same post; but as he was of a modest disposition, he constantly declined, and made great difficulties of engaging himself in public business. Socrates therefore addressed himself to him in this manner: If you knew any man that could gain the prizes in the public games, and by that means render himself illustrious, and acquire glory to his country, what would you say of him if he refused to offer himself to the combat? I would say, answered Charmidas, that he was a mean-spirited effeminate fellow. And if a man were capable of governing a republic, of increasing its power by his advice, and of raising himself by this means to a high degree of honor, would you not brand him likewise with meanness of soul, if he would not present himself to be employed?

Perhaps I might, said Charmidas; but why do you ask me this question? Socrates replied, because you are capable of managing the affairs of the republic; and nevertheless you avoid doing so, though in quality of a citizen you are *obliged* to take care of the commonwealth. Be no longer then thus negligent in this matter; consider your abilities and your duty with more attention, and let not slip the occasions of serving the republic, and of rendering it, if possible, more florishing than it is. This will be a blessing whose influence will descend not only on the other citizens, but on your best friends and yourself.

SELF-DENIAL NOT THE ESSENCE OF VIRTUE.

From the Pennsylvania Gazette, No. 324, *Feb.* 18, 1735.

It is commonly asserted, that without self-denial there is no virtue, and that the greater the self-denial the greater the virtue.

If it were said, that he who cannot deny himself any thing he inclines to, though he knows it will be to his hurt, has not the virtue of resolution or fortitude, it would be intelligible enough, but as it stands it seems obscure or erroneous.

Let us consider some of the virtues singly.

If a man has no inclination to wrong people in his dealings, if he feels no temptation to it, and therefore never does it, can it be said that he is not a just man? If he is a just man, has he not the virtue of justice?

If to a certain man idle diversions have nothing in them that is tempting, and therefore he never relaxes his application to business for their sake, is he not an industrious man? Or, has he not the virtue of industry?

I might in like manner instance in all the rest of the virtues; but, to make the thing short, as it is certain that the more we strive against the temptation to any vice, and practise the contrary virtue, the weaker will that temptation be, and the stronger will be that habit, till at length the temptation has no force or entirely vanishes; does it follow from thence, that in our endeavors to overcome vice we grow continually less and less virtuous, till at length we have no virtue at all?

If self-denial be the essence of virtue, then it follows, that the man who is naturally temperate, just, &c. is not virtuous; but that in order to be virtuous,

he must, in spite of his natural inclinations, wrong his neighbors, and eat and drink, &c. to excess.

But perhaps it may be said, that by the word virtue in the above assertion, is meant merit; and so it should stand thus: without self-denial there is no merit, and the greater the self-denial the greater the merit.

The self-denial here meant, must be when our inclinations are towards vice, or else it would still be nonsense.

By merit is understood desert; and, when we say a man merits, we mean that he deserves praise or reward.

We do not pretend to merit any thing of God, for he is above our services; and the benefits he confers on us, are the effects of his goodness and bounty.

All our merit then is with regard to one another, and from one to another.

Taking then the assertion as it last stands,

If a man does me a service from a natural benevolent inclination, does he deserve less of me than another, who does me the like kindness against his inclination?

If I have two journeymen, one naturally industrious, the other idle, but both perform a day's work equally good, ought I to give the latter the most wages?

Indeed lazy workmen are commonly observed to be more extravagant in their demands than the industrious, for if they have not more for their work, they cannot live as well; but though it be true to a proverb, that lazy folks take the most pains, does it follow that they deserve the most money?

If you were to employ servants in affairs of trust, would you not bid more for one you knew was naturally honest, than for one naturally roguish, but who has lately acted honestly? for currents whose natural channel is dammed up, till the new course is by time worn sufficiently deep, and become natural, are apt to break their banks. If one servant is more valuable than another, has he not more merit than the other? and yet this is not on account of superior self-denial.

Is a patriot not praiseworthy if public spirit is natural to him?

Is a pacing-horse less valuable for being a natural pacer?

Nor, in my opinion, has any man less merit for having in general natural virtuous inclinations.

The truth is, that temperance, justice, charity, &c. are virtues, whether practised with, or against our inclinations, and the man who practises them,

merits our love and esteem; and self-denial is neither good nor bad, but as it is applied: he that denies a vicious inclination, is virtuous in proportion to his resolution; but the most perfect virtue is above all temptation, such as the virtue of the saints in heaven; and he who does a foolish, indecent, or wicked thing, merely because it is contrary to his inclination (like some mad enthusiasts I have read of, who ran about naked, under the notion of taking up the cross), is not practising the reasonable science of virtue, but is a lunatic.

ON THE USEFULNESS OF THE MATHEMATICS.

From the Pennsylvania Gazette, No. 360, Oct. 30, 1735.

MATHEMATICS originally signifies any kind of discipline or learning, but now it is taken for that science which teaches or contemplates whatever is capable of being numbered or measured. That part of the mathematics which relates to numbers only, is called *arithmetic;* and that which is concerned about measure in general, whether length, breadth, motion, force, &c. is called *geometry.*

As to the usefulness of arithmetic, it is well-known that no business, commerce, trade, or employment whatsoever, even from the merchant to the shopkeeper, &c. can be managed and carried on without the assistance of numbers; for by these the trader computes the value of all sorts of goods that he dealeth in, does his business with ease and certainty, and informs himself how matters stand at any time with respect to men, money, or merchandise, to profit and loss, whether he goes forward or backward, grows richer or poorer. Neither is this science only useful to the merchant, but is reckoned the *primum mobile* (or first mover) of all mundane affairs in general, and is useful for all sorts and degrees of men, from the highest to the lowest.

As to the usefulness of geometry, it is as certain that no curious art, or mechanic work, can either be invented, improved, or performed, without its assisting principles.

It is owing to this, that astronomers are put into a way of making their observations, coming at the knowledge of the extent of the heavens, the duration of time, the motions, magnitudes, and distances of the heavenly bodies, their situations, positions, risings, settings, aspects, and eclipses; also the measure of seasons, of years, and of ages.

It is by the assistance of this science that geographers present to our view at once the magnitude and form of the whole earth, the vast extent of the seas, the divisions of empires, kingdoms, and provinces.

It is by the help of geometry the ingenious mariner is instructed how to guide a ship through the vast ocean, from one part of the earth to another, the nearest and safest way, and in the shortest time.

By help of this science the architects take their just measures for the structure of buildings, as private houses, churches, palaces, ships, fortifications, &c.

By its help engineers conduct all their works, take the situation and plan of towns, forts, and castles, measure their distances from one another, and carry their measure into places that are only accessible to the eye.

From hence also is deduced that admirable art of drawing sun-dials on any plane howsoever situate, and for any part of the world, to point out the exact time of the day, sun's declination, altitude, amplitude, azimuth, and other astronomical matters.

By geometry the surveyor is directed how to draw a map of any country, to divide his lands, and to lay down and plot any piece of ground, and thereby discover the area in acres, rods, and perches. The gauger is instructed how to find the capacities or solid contents of all kinds of vessels, in barrels, gallons, bushels, &c. And the measurer is furnished with rules for finding the areas and contents of superfices and solids, and casting up all manner of workmanship. All these, and many more useful arts, too many to be enumerated here, wholly depend upon the aforesaid sciences, viz. arithmetic and geometry.

This science is descended from the infancy of the world, the inventors of which were the first propagators of human kind, as Adam, Noah, Abraham, Moses, and divers others.

There has not been any science so much esteemed and honored as this of the mathematics, nor with so much industry and vigilance become the care of great men, and labored in by the potentates of the world, viz. emperors, kings, princes, &c.

Mathematical demonstrations are a logic of as much or more use, than that commonly learned at schools, serving to a just formation of the mind, enlarging its capacity, and strengthening it so as to render the same capable of exact reasoning, and discerning truth from falsehood in all occurrences, even subjects not mathematical. For which reason it is said, the Egyptians, Persians,

and Lacedemonians, seldom elected any new kings, but such as had some knowledge in the mathematics, imagining those who had not men of imperfect judgments, and unfit to rule and govern.

Though Plato's censure, that those who did not understand the 117th proposition of the 13th book of Euclid's Elements, ought not to be ranked amongst rational creatures, was unreasonable and unjust; yet to give a man the character of universal learning, who is destitute of a competent knowledge in the mathematics, is no less so.

The usefulness of some particular parts of the mathematics in the common affairs of human life, has rendered some knowledge of them very necessary to a great part of mankind, and very convenient to all the rest that are any way conversant beyond the limits of their own particular callings.

Those whom necessity has obliged to get their bread by manual industry, where some degree of art is required to go along with it, and who have had some insight into these studies, have very often found advantages from them sufficient to reward the pains they were at in acquiring them. And whatever may have been imputed to some other studies, under the notion of insignificancy and loss of time, yet these, I believe, never caused repentance in any, except it was for their remissness in the prosecution of them.

Philosophers do generally affirm that human knowledge to be most excellent, which is conversant amongst the most excellent things. What science then can there be more noble, more excellent, more useful for men, more admirably high and demonstrative, than this of the mathematics.

I shall conclude with what Plato says, *lib.* 7, of his Republic, with regard to the excellence and usefulness of geometry, being to this purpose:

"Dear Friend,—You see then that mathematics are necessary, because by the exactness of the method, we get a habit of using our minds to the best advantage: and it is remarkable, that all men being capable by nature to reason and understand the sciences, the less acute, by studying this, though useless to them in every other respect, will gain this advantage, that their minds will be improved in reasoning aright; for no study employs it more, nor makes it susceptible of attention so much; and those who we find have a mind worth cultivating, ought to apply themselves to this study."

ON TRUE HAPPINESS.

From the Pennsylvania Gazette, No. 363, Nov. 20, 1735.

THE desire of happiness in general is so natural to us, that all the world are in pursuit of it; all have this one end in view, though they take such different methods to attain it, and are so much divided in their notions of it.

Evil, as evil, can never be chosen; and though evil is often the effect of our own choice, yet we never desire it, but under the appearance of an imaginary good.

Many things we indulge ourselves in may be considered by us as evils, and yet be desirable; but then they are only considered as evils in their effects and consequences, not as evils at present, and attended with immediate misery.

Reason represents things to us, not only as they are at present, but as they are in their whole nature and tendency; passion only regards them in their former light: when this governs us, we are regardless of the future, and are only affected with the present.

It is impossible ever to enjoy ourselves rightly, if our conduct be not such as to preserve the harmony and order of our faculties, and the original frame and constitution of our minds; all true happiness, as all that is truly beautiful, can only result from order.

Whilst there is a conflict betwixt the two principles of passion and reason, we must be miserable in proportion to the struggle; and when the victory is gained, and reason so far subdued as seldom to trouble us with its remonstrances, the happiness we have then, is not the happiness of our rational nature, but the happiness only of the inferior and sensual part of us, and consequently a very low and imperfect happiness, to what the other would have afforded us.

If we reflect upon any one passion and disposition of mind, abstract from virtue, we shall soon see the disconnexion between that and true solid happiness. It is of the very essence, for instance, of envy to be uneasy and disquieted. Pride meets with provocations and disturbances upon almost every occasion. Covetousness is ever attended with solicitude and anxiety. Ambition has its disappointments to sour us, but never the good fortune to satisfy us; its appetite grows the keener by indulgence, and all we can gratify it with at present serves but the more to inflame its insatiable desires.

The passions, by being too much conversant with earthly objects, can never fix in us a proper composure and acquiescence of mind. Nothing but an indifference to the things of this world, an entire submission to the will of Providence here, and a well-grounded expectation of happiness hereafter, can give us a true satisfactory enjoyment of ourselves. Virtue is the best guard against the many unavoidable evils incident to us; nothing better alleviates the weight of the afflictions, or gives a truer relish of the blessings of human life.

What is without us has not the least connexion with happiness, only so far as the preservation of our lives and health depends upon it. Health of body, though so far necessary that we cannot be perfectly happy without it, is not sufficient to make us happy of itself. Happiness springs immediately from the mind; health is but to be considered as a candidate or circumstance, without which this happiness cannot be tasted pure and unabated.

Virtue is the best preservative of health, as it prescribes temperance, and such a regulation of our passions as is most conducive to the well-being of the animal economy, so that it is, at the same time, the only true happiness of the mind and the best means of preserving the health of the body.

If our desires are to the things of this world, they are never to be satisfied: if our great view is upon those of the next, the expectation of them is an infinitely higher satisfaction than the enjoyment of those of the present.

There is no happiness, then, but in a virtuous and self-approving conduct; unless our actions will bear the test of our sober judgments, and reflections upon them, they are not the actions, and consequently not the happiness of a rational being.

ON DISCOVERIES.

From the Pennsylvania Gazette, No. 409, *Oct.* 14, 1736.

THE world but a few ages since, was in a very poor condition, as to trade and navigation; nor indeed, were they much better in other matters of useful knowledge. It was a green-headed time; every useful improvement was hid from them; they had neither looked into heaven, nor earth, into the sea, nor land, as has been done since. They had philosophy without experiments, mathematics without instruments, geometry without scale, astronomy without demonstration.

They made war without powder, shot, cannon, or mortars; nay, the mob made their bonfires without squibs or crackers. They went to sea without compass, and sailed without the needle. They viewed the stars without telescopes, and measured latitudes without observation. Learning had no printing-press, writing no paper, and paper no ink: the lover was forced to send his mistress a deal board for a love-letter, and a billet-doux might be about the size of an ordinary trencher. They were clothed without manufacture, and their richest robes were the skins of the most formidable monsters: they carried on trade without books, and correspondence without posts: their merchants kept no accounts, their shop-keepers no cash-books; they had surgery without anatomy, and physicians without the *materia medica:* they gave emetics without ipecacuanha, drew blisters without cantharides, and cured agues without the bark.

As for geographical discoveries, they had neither seen the North Cape, nor the Cape of Good Hope south. All the discovered inhabited world, which they knew and conversed with, was circumscribed within very narrow limits, viz. France, Britain, Spain, Italy, Germany, and Greece; the lesser Asia, the west part of Persia, Arabia, the north parts of Africa, and the islands of the Mediterranean sea, and this was the whole world to them; not that even these countries were fully known either, and several parts of them not inquired into at all. Germany was known little further than the banks of the Elbe; Poland as little beyond the Vistula, or Hungary as little beyond the Danube; Muscovy or Russia perfectly unknown, as much as China beyond it; and India only by a little commerce upon the coast, about Surat and Malabar; Africa had been more unknown, but by the ruin of the Carthaginians; all the western coast of it was sunk out of knowledge again, and forgotten; the northern coast of Africa, in the Mediterranean, remained known, and that was all; for the Saracens over-running the nations which were planted there, ruined commerce, as well as religion; the Baltic sea was not discovered, nor even the navigation of it known; for the Teutonic knights came not thither till the 13th century.

America was not heard of, nor so much as a suggestion in the minds of men that any part of the world lay that way. The coasts of Greenland, or Spitsbergen, and the whale fishing, not known; the best navigators in the world, at that time, would have fled from a whale, with much more fright and horror, than from the devil, in the most terrible shapes they had been told he appeared in.

The coasts of Angola, Congo, the Gold and the Grain coasts, on the west side of Africa, whence, since that time, such immense wealth has been drawn, not discovered, nor the least inquiry made after them. All the East-India and China trade, not only undiscovered, but out of the reach of expectation! Coffee and tea, (those modern blessings of mankind) had never been heard of: all the unbounded ocean, we now call the South Sea, was hid, and unknown: all the Atlantic ocean beyond the mouth of the Straits, was frightful and terrible in the distant prospect, nor durst any one peep into it, otherwise than as they might creep along the coast of Africa, towards Sallee, or Santa Cruz. The North Sea was hid in a veil of impenetrable darkness; the White Sea, or Archangel, was a very modern discovery; not found out till Sir Hugh Willoughby doubled the North Cape, and paid dear for the adventure, being frozen to death with all his crew, on the coast of Lapland; while his companions' ship, with the famous Mr. Chancellor, went on to the Gulf of Russia, called the White Sea, where no Christian strangers had ever been before him.

In these narrow circumstances stood the world's knowledge at the beginning of the 15th century, when men of genius began to look abroad, and about them. Now, as it was wonderful to see a world so full of people, and people so capable of improving, yet so stupid and so blind, so ignorant and so perfectly unimproved, it was wonderful to see, with what a general alacrity they took the alarm, almost all together, preparing themselves as it were on a sudden, by a general inspiration, to spread knowledge through the earth, and to search into every thing that it was impossible to uncover.

How surprising is it to look back, so little a way behind us, and see, that even in less than two hundred years, all this (now so self-wise) part of the world did not so much as know whether there was any such place as a Russia, a China, a Guinea, a Greenland, or a North Cape? That as to America, it was never supposed there was any such place;[1] neither had the world, though they stood upon the shoulders of four thousand years' experience, the least thought, so much as that there was any land that way!

As they were ignorant of places, so of things also; so vast are the improvements of science, that all our knowledge of mathematics, of nature, of the

[1] It is now supposed that *America* was actually discovered in the *eleventh* century by the Icelanders,—See Mallet's Northern Antiquities, Vol. I., and Franklin's PRIVATE CORRESPONDENCE, Part I. 8vo. Third Edition.

brightest part of human wisdom, had their admission among us within these two last centuries.

What was the world, then, before? And to what were the heads and hands of mankind applied? The rich had no commerce, the poor no employment; war and the sword was the great field of honor, the stage of preferment; and you have scarce a man eminent in the world, for any thing before that time, but for a furious outrageous falling upon his fellow-creatures, like Nimrod, and his successors of modern memory.

The world is now daily increasing in experimental knowledge; and let no man flatter the age, with pretending we have arrived at a perfection of discoveries.

> What's now discovered, only serves to show,
> That nothing's known, to what is yet to know.

THE WASTE OF LIFE.

From the Pennsylvania Gazette, No. 404, Nov. 18, 1736.

ANERGUS was a gentleman of a good estate; he was bred to no business, and could not contrive how to waste his hours agreeably; he had no relish for any of the proper works of life, nor any taste at all for the improvements of the mind; he spent generally ten hours of the four-and-twenty in his bed; he dozed away two or three more on his couch, and as many were dissolved in good liquor every evening, if he met with company of his own humor. Five or six of the rest he sauntered away with much indolence: the chief business of them was to contrive his meals, and to feed his fancy before-hand with the promise of a dinner and supper; not that he was so absolute a glutton, or so entirely devoted to appetite; but chiefly because he knew not how to employ his thoughts better, he let them rove about the sustenance of his body. Thus he had made a shift to wear off ten years since the paternal estate fell into his hands: and yet, according to the abuse of words in our day, he was called a man of virtue, because he was scarce ever known to be quite drunk, nor was his nature much inclined to lewdness.

One evening, as he was musing alone, his thoughts happened to take a most unusual turn, for they cast a glance backward, and began to reflect on his manner of life. He bethought himself what a number of living beings had been made a sacrifice to support his carcase, and how much corn and wine had

been mingled with those offerings. He had not quite lost all the arithmetic that he learned when he was a boy, and he set himself to compute what he had devoured since he came to the age of man.

"About a dozen feathered creatures, small and great, have one week with another (said he) given up their lives to prolong mine, which in ten years amounts to at least six thousand.

"Fifty sheep have been sacrificed in a year, with half a hecatomb of black cattle, that I might have the choicest part offered weekly upon my table. Thus a thousand beasts out of the flock and the herd have been slain in ten years' time to feed me, besides what the forest has supplied me with. Many hundreds of fishes have, in all their varieties, been robbed of life for my repast, and of the smaller fry as many thousands.

"A measure of corn would hardly afford me fine flour enough for a month's provision, and this arises to above six score bushels; and many hogsheads of ale and wine, and other liquors, have passed through this body of mine, this wretched strainer of meat and drink.

"And what have I done all this time for God or man? What a vast profusion of good things upon an useless life, and a worthless liver! There is not the meanest creature among all these which I have devoured, but hath answered the end of its creation better than I. It was made to support human nature, and it hath done so. Every crab and oyster I have eat, and every grain of corn I have devoured, hath filled up its place in the rank of beings with more propriety and honor than I have done: O shameful waste of life and time!"

In short, he carried on his moral reflections with so just and severe a force of reason as constrained him to change his whole course of life, to break off his follies at once, and to apply himself to gain some useful knowledge, when he was more than thirty years of age; he lived many following years, with the character of a worthy man, and an excellent Christian; he performed the kind offices of a good neighbor at home, and made a shining figure as a patriot in the senate-house; he died with a peaceful conscience, and the tears of his country were dropped upon his tomb.

The world, that knew the whole series of his life, stood amazed at the mighty change. They beheld him as a wonder of reformation, while he himself confessed and adored the Divine power and mercy which had transformed him from a brute to a man.

But this was a single instance; and we may almost venture to write MIRA-

CLE upon it. Are there not numbers of both sexes among our young gentry, in this degenerate age, whose lives thus run to utter waste, without the least tendency to usefulness?

When I meet with persons of such a worthless character as this, it brings to my mind some scraps of Horace:

"Nos numerus sumus, et fruges consumere nati.
——————Alcinoique juventus,
Cui pulchrum fuit in medios dormire dies," &c.

PARAPHRASE.

There are a number of us creep
Into this world, to eat and sleep;
And know no reason why they're born,
But merely to consume the corn,
Devour the cattle, foul, and fish,
And leave behind an empty dish:
Tho' crows and ravens do the same,
Unlucky birds of hateful name;
Ravens or crows might fill their places,
And swallow corn and eat carcases.
Then if their tomb-stone, when they die,
Ben't taught to flatter and to lie,
There's nothing better will be said,
Than that they've eat up all their bread,
Drank all their drink, and gone to bed.

There are other fragments of that heathen poet, which occur on such occasions; one in the first of his Satires, the other in the last of his Epistles, which seem to represent life only as a season of luxury.

"——————Exacto contentus tempore vitæ
Cedat uti conviva satur——————
Lusisti satis, edisti satis atque bibisti;
Tempus abire tibi."

Which may be thus put into English:

Life's but a feast: and when we die,
Horace would say, if he were by,
Friend, thou hast eat and drank enough,
'Tis time now to be marching off:
Then like a well-fed guest depart,
With cheerful looks, and ease at heart;
Bid all your friends good night, and say,
You've done the business of the day.

ADVICE TO A YOUNG TRADESMAN, WRITTEN ANNO 1748.

To my Friend, A. B.

As you have desired it of me, I write the followng hints, which have been of service to me, and may, if observed, be so to you.

Remember, that *time* is money. He that can earn ten shillings a-day by his labor, and goes abroad, or sits idle one half of that day, though he spends but sixpence during his diversion or idleness, ought not to reckon *that* the only expense; he has really spent, or rather thrown away, five shillings besides.

Remember, that *credit* is money. If a man lets his money lie in my hands after it is due, he gives me the interest, or so much as I can make of it during that time. This amounts to a considerable sum where a man has good and large credit, and makes good use of it.

Remember, that money is of the prolific generating nature. Money can beget money, and its offspring can beget more, and so on. Five shillings turned is six, turned again it is seven and three-pence, and so on till it becomes an hundred pounds. The more there is of it, the more it produces every turning, so that the profits rise quicker and quicker. He that kills a breeding sow, destroys all her offspring to the thousandth generation. He that murders a crown, destroys all that it might have produced, even scores of pounds.

Remember, that six pounds a-year is but a groat a-day. For this little sum (which may be daily wasted either in time or expense unperceived) a man of credit may, on his own security, have the constant possession and use of an hundred pounds. So much in stock, briskly turned by an industrious man, produces great advantage.

Remember this saying, "The good paymaster is lord of another man's purse." He that is known to pay punctually and exactly to the time he promises, may at any time, and on any occasion, raise all the money his friends can spare. This is sometimes of great use. After industry and frugality, nothing contributes more to the raising of a young man in the world than punctuality and justice in all his dealings: therefore, never keep borrowed money an hour beyond the time you promised, lest a disappointment shut up your friend's purse for ever.

The most trifling actions that affect a man's credit are to be regarded. The sound of your hammer at five in the morning, or nine at night, heard by a cre-

ditor, makes him easy six months longer: but if he sees you at a billiard-table, or hears your voice at a tavern, when you should be at work, he sends for his money the next day; demands it before he can receive it in a lump.

It shows, besides, that you are mindful of what you owe; it makes you appear a careful as well as an honest man, and that still increases your credit.

Beware of thinking all your own that you possess, and of living accordingly. It is a mistake that many people who have credit fall into. To prevent this, keep an exact account for some time, both of your expenses and your income. If you take the pains at first to mention particulars, it will have this good effect; you will discover how wonderfully small trifling expenses mount up to large sums, and will discern what might have been, and may for the future be saved, without occasioning any great inconvenience.

In short, the way to wealth, if you desire it, is as plain as the way to market. It depends chiefly on two words, *industry* and *frugality*; that is, waste neither *time* nor *money*, but make the best use of both. Without industry and frugality nothing will do, and with them every thing. He that gets all he can honestly, and saves all he gets (necessary expenses excepted), will certainly become *rich*—if that Being who governs the world, to whom all should look for a blessing on their honest endeavors, doth not, in his wise providence, otherwise determine.

AN OLD TRADESMAN.

NECESSARY HINTS TO THOSE THAT WOULD BE RICH.

THE use of money is all the advantage there is in having money.

For six pounds a-year you may have the use of one hundred pounds, provided you are a man of known prudence and honesty.

He that spends a groat a-day idly, spends idly above six pounds a-year, which is the price for the use of one hundred pounds.

He that wastes idly a groat's worth of his time per day, one day with another, wastes the privilege of using one hundred pounds each day.

He that idly loses five shillings' worth of time, loses five shillings, and might as prudently throw five shillings into the sea.

He that loses five shillings, not only loses that sum, but all the advantage that might be made by turning it in dealing, which, by the time that a young man becomes old, will amount to a considerable sum of money.

Again: he that sells upon credit, asks a price for what he sells equivalent to the principal and interest of his money for the time he is to be kept out of it; therefore, he that buys upon credit, pays interest for what he buys, and he that pays ready money, might let that money out to use; so that he that possesses any thing he has bought, pays interest for the use of it.

Yet, in buying goods, it is best to pay ready money, because he that sells upon credit, expects to lose five per cent. by bad debts; therefore he charges on all he sells upon credit, an advance that shall make up that deficiency.

Those who pay for what they buy upon credit, pay their share of this advance.

He that pays ready money, escapes, or may escape, that charge.

A penny sav'd is two-pence clear,
A pin a-day's a groat a-year.

THE WAY TO MAKE MONEY PLENTY IN EVERY MAN'S POCKET.

At this time, when the general complaint is that "money is scarce," it will be an act of kindness to inform the moneyless how they may reinforce their pockets. I will acquaint them with the true secret of money-catching, the certain way to fill empty purses, and how to keep them always full. Two simple rules, well observed, will do the business.

First, let honesty and industry be thy constant companions; and

Secondly, spend one penny less than thy clear gains.

Then shall thy hide-bound pocket soon begin to thrive, and will never again cry with the empty belly-ache; neither will creditors insult thee, nor want oppress, nor hunger bite, nor nakedness freeze thee. The whole hemisphere will shine brighter, and pleasure spring up in every corner of thy heart. Now, therefore, embrace these rules and be happy. Banish the bleak winds of sorrow from thy mind, and live independent. Then shalt thou be a man, and not hide thy face at the approach of the rich, nor suffer the pain of feeling little when the sons of fortune walk at thy right hand; for independency, whether with little or much, is good fortune, and placeth thee on even ground with the proudest of the golden fleece. Oh, then, be wise, and let industry walk with thee in the morning, and attend thee until thou reachest the evening hour for rest. Let honesty be as the breath of thy soul, and never forget to have a

penny when all thy expenses are enumerated and paid; then shalt thou reach the point of happiness, and independence shall be thy shield and buckler, thy helmet and crown; then shall thy soul walk upright, nor stoop to the silken wretch because he hath riches, nor pocket an abuse because the hand which offers it wears a ring set with diamonds.

THE WAY TO WEALTH,

AS CLEARLY SHOWN IN THE PREFACE OF AN OLD PENNSYLVANIA ALMANACK, INTITLED, "POOR RICHARD IMPROVED."[1]

[Referred to in Memoirs of the Life, Part II. p. 77. 4to ed. p. 146. 8vo. ed.]

COURTEOUS READER,

I HAVE heard, that nothing gives an author so great pleasure as to find his works respectfully quoted by others. Judge, then, how much I must have been gratified by an incident I am going to relate to you. I stopped my horse lately, where a great number of people were collected at an auction of merchants' goods. The hour of the sale not being come, they were conversing on the badness of the times; and one of the company called to a plain clean old man with white locks, "Pray, *Father Abraham*, what think you of the times? Will not these heavy taxes quite ruin the country? How shall we ever be able to pay them? What would you advise us to?"—*Father Abraham* stood up, and replied, "If you would have my advice, I will give it you in short; *For a word to the wise is enough*, as *Poor Richard* says." They joined in desiring him to speak his mind, and gathering round him, he proceeded as follows:—

"Friends," said he, "the taxes are indeed very heavy, and if those laid on by the government were the only ones we had to pay, we might more easily discharge them; but we have many others, and much more grievous to some of us. We are taxed twice as much by our idleness, three times as much by our pride, and four times as much by our folly; and from these taxes the com-

---

[1] The origin and intent of this popular piece is fully explained by Dr. Franklin in the Memoirs of his Life. At the time of its first publication (in 1757) it was read with much avidity and profit by the people of America, and is supposed to have greatly contributed to the formation of that *national character* they have since exhibited.

missioners cannot ease or deliver us, by allowing an abatement. However, let us hearken to good advice, and something may be done for us; *God helps them that help themselves*, as *Poor Richard* says.

"I. It would be thought a hard government that should tax its people one-tenth part of their time, to be employed in its service: but idleness taxes many of us much more; sloth, by bringing on diseases, absolutely shortens life. *Sloth, like rust, consumes faster than labor wears; while the used key is always bright*, as *Poor Richard* says. *But dost thou love life, then do not squander time, for that is the stuff life is made of*, as *Poor Richard* says. How much more than is necessary do we spend in sleep! forgetting, that *The sleeping fox catches no poultry, and that there will be sleeping enough in the grave*, as *Poor Richard* says.

"*If time be of all things the most precious, wasting time must be*, as *Poor Richard* says, *the greatest prodigality*; since, as he elsewhere tells us, *Lost time is never found again; and what we call time enough, always proves little enough:* let us then up and be doing, and doing to the purpose; so by diligence shall we do more with less perplexity. *Sloth makes all things difficult, but industry all easy; and he that riseth late must trot all day, and shall scarce overtake his business at night; while laziness travels so slowly, that poverty soon overtakes him. Drive thy business, let not that drive thee; and early to bed, and early to rise, makes a man healthy, wealthy, and wise*, as *Poor Richard* says.

"So what signifies wishing and hoping for better times? We may make these times better if we bestir ourselves. *Industry need not wish, and he that lives upon hopes will die fasting. There are no gains without pains; then help hands, for I have no lands*; or, if I have, they are smartly taxed. *He that hath a trade, hath an estate; and he that hath a calling, hath an office of profit and honor*, as *Poor Richard* says; but then the trade must be worked at, and the calling followed, or neither the estate nor the office will enable us to pay our taxes. If we are industrious we shall never starve; for, *At the working man's house hunger looks in, but dares not enter*. Nor will the bailiff or the constable enter, for *Industry pays debts, while despair increaseth them*. What though you have found no treasure, nor has any rich relation left you a legacy, *Diligence is the mother of good luck, and God gives all things to industry. Then plough deep, while sluggards sleep, and you shall have corn to sell and to keep*. Work while it is called to-day, for you know not how much you may be hindered to-morrow. *One to-day is worth two to-morrows*, as *Poor Richard* says; and further, *Never*

leave that till to-morrow which you can do to-day. If you were a servant, would you not be ashamed that a good master should catch you idle? Are you then your own master? be ashamed to catch yourself idle, when there is so much to be done for yourself, your family, your country, and your king. Handle your tools without mittens; remember that *The cat in gloves catches no mice*, as *Poor Richard* says. It is true there is much to be done, and perhaps you are weak-handed; but stick to it steadily, and you will see great effects; for *Constant dropping wears away stones; and by diligence and patience the mouse ate in two the cable; and little strokes fell great oaks.*

"Methinks I hear some of you say, 'Must a man afford himself no leisure?' —I will tell thee, my friend, what *Poor Richard* says, *Employ thy time well, if thou meanest to gain leisure; and since thou art not sure of a minute, throw not away an hour.* Leisure is time for doing something useful; this leisure the diligent man will obtain, but the lazy man never; for, *A life of leisure and a life of laziness are two things. Many, without labor, would live by their wits only, but they break for want of stock;* whereas industry gives comfort, and plenty, and respect. *Fly pleasures, and they will follow you. The diligent spinner has a large shift; and now I have a sheep and a cow, every body bids me good morrow.*

"II. But with our industry we must likewise be steady, settled, and careful, and oversee our own affairs with our own eyes, and not trust too much to others; for, as *Poor Richard* says,

I never saw an oft-removed tree,
Nor yet an oft-removed family,
That throve so well as those that settled be.

And again, *Three removes are as bad as a fire;* and again, *Keep thy shop, and thy shop will keep thee;* and again, *If you would have your business done, go; if not, send.* And again,

He that by the plough would thrive,
Himself must either hold or drive.

And again, *The eye of a master will do more work than both his hands;* and again, *Want of care does us more damage than want of knowledge;* and again, *Not to oversee workmen, is to leave them your purse open.* Trusting too much to others' care is the ruin of many; for, *In the affairs of this world men are saved, not by faith, but by the want of it;* but a man's own care is profitable; for, *If you would have a faithful servant, and one that you like, serve yourself. A little*

neglect may breed great mischief: for want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost, being overtaken and slain by the enemy; all for want of a little care about a horse-shoe nail.

"III. So much for industry, my friends, and attention to one's own business; but to these we must add frugality, if we would make our industry more certainly successful. A man may, if he knows not how to save as he gets, keep his nose all his life to the grindstone, and die not worth a groat at last. *A fat kitchen makes a lean will;* and,

Many estates are spent in the getting,
Since women for tea forsook spinning and knitting,
And men for punch forsook hewing and splitting.

If you would be wealthy, think of saving as well as of getting. The Indies have not made Spain rich, because her outgoes are greater than her incomes.

"Away then with your expensive follies, and you will not then have so much cause to complain of hard times, heavy taxes, and chargeable families; for

Women and wine, game and deceit,
Make the wealth small, and the want great.

And further, *What maintains one vice, would bring up two children.* You may think, perhaps, that a little tea, or a little punch now and then, diet a little more costly, clothes a little finer, and a little entertainment now and then, can be no great matter; but remember, *Many a little makes a mickle.* Beware of little expenses; *A small leak will sink a great ship,* as *Poor Richard* says; and again, *Who dainties love, shall beggars prove;* and moreover, *Fools make feasts, and wise men eat them.*

"Here you are all got together at this sale of fineries and nick-nacks. You call them *goods;* but, if you do not take care, they will prove *evils* to some of you. You expect they will be sold cheap, and perhaps they may for less than they cost; but, if you have no occasion for them, they must be dear to you. Remember what *Poor Richard* says, *Buy what thou hast no need of, and ere long thou shalt sell thy necessaries.* And again, *At a great pennyworth pause a while.* He means, that perhaps the cheapness is apparent only, and not real; or the bargain, by straitening thee in thy business, may do thee more harm than good. For in another place he says, *Many have been ruined by buying good pennyworths.* Again, *It is foolish to lay out money in a purchase of repentance;* and yet this

folly is practised every day at auctions, for want of minding the Almanack. Many a one, for the sake of finery on the back, have gone with a hungry belly and half-starved their families: *Silks and satins, scarlet and velvets, put out the kitchen fire,* as *Poor Richard* says. These are not the necessaries of life; they can scarcely be called the conveniences; and yet, only because they look pretty, how many want to have them! By these, and other extravagancies, the genteel are reduced to poverty, and forced to borrow of those whom they formerly despised, but who, through industry and frugality, have maintained their standing; in which case it appears plainly, that *A ploughman on his legs is higher than a gentleman on his knees,* as *Poor Richard* says. Perhaps they have had a small estate left them, which they knew not the getting of; they think *It is day, and will never be night;* that a little to be spent out of so much is not worth minding; but *Always taking out of the meal-tub, and never putting in, soon comes to the bottom,* as *Poor Richard* says; and then, *When the well is dry, they know the worth of water.* But this they might have known before, if they had taken his advice:—*If you would know the value of money, go and try to borrow some; for he that goes a borrowing goes a sorrowing,* as *Poor Richard* says; and indeed so does he that lends to such people, when he goes to get it in again.—*Poor Dick* further advises, and says,

Fond pride of dress is sure a very curse;
Ere fancy you consult, consult your purse.

And again, *Pride is as loud a beggar as Want, and a great deal more saucy.* When you have bought one fine thing, you must buy ten more, that your appearance may be all of a piece; but *Poor Dick* says, *It is easier to suppress the first desire, than to satisfy all that follow it.* And it is as truly folly for the poor to ape the rich, as for the frog to swell in order to equal the ox.

Vessels large may venture more,
But little boats should keep near shore.

It is, however, a folly soon punished; for, as *Poor Richard* says, *Pride that dines on vanity, sups on contempt; Pride breakfasted with Plenty, dined with Poverty, and supped with Infamy.* And, after all, of what use is this pride of appearance, for which so much is risked, so much is suffered? It cannot promote health, nor ease pain; it makes no increase of merit in the person; it creates envy; it hastens misfortune.

"But what madness must it be to *run in debt* for these superfluities? We are

offered, by the terms of this sale, six months' credit; and that, perhaps, has induced some of us to attend it, because we cannot spare the ready money, and hope now to be fine without it. But, ah! think what you do when you run in debt; you give to another power over your liberty. If you cannot pay at the time, you will be ashamed to see your creditor; you will be in fear when you speak to him; you will make poor pitiful sneaking excuses, and, by degrees, come to lose your veracity, and sink into base downright lying; for, *The second vice is lying, the first is running in debt*, as *Poor Richard* says; and again, to the same purpose, *Lying rides upon Debt's back:* whereas a free-born Englishman ought not to be ashamed nor afraid to see or speak to any man living. But poverty often deprives a man of all spirit and virtue. *It is hard for an empty bag to stand upright.* What would you think of that prince, or of that government, who should issue an edict forbidding you to dress like a gentleman or gentlewoman, on pain of imprisonment or servitude? Would you not say that you were free, have a right to dress as you please, and that such an edict would be a breach of your privileges, and such a government tyrannical? And yet you are about to put yourself under such tyranny, when you run in debt for such dress! Your creditor has authority, at his pleasure, to deprive you of your liberty, by confining you in goal till you shall be able to pay him. When you have got your bargain, you may, perhaps, think little of payment; but, as *Poor Richard* says, *Creditors have better memories than debtors; creditors are a superstitious sect, great observers of set days and times.* The day comes round before you are aware, and the demand is made before you are prepared to satisfy it; or, if you bear your debt in mind, the term, which at first seemed so long, will, as it lessens, appear extremely short: time will seem to have added wings to his heels as well as his shoulders. *Those have a short Lent, who owe money to be paid at Easter.* At present, perhaps, you may think yourselves in thriving circumstances, and that you can bear a little extravagance without injury; but

For age and want save while you may,
No morning sun lasts a whole day.

Gain may be temporary and uncertain, but ever, while you live, expense is constant and certain; and, *It is easier to build two chimneys, than to keep one in fuel*, as *Poor Richard* says: *so, rather go to bed supperless, than rise in debt.*

Get what you can, and what you get hold:
'Tis the stone that will turn all your lead into gold.

And, when you have got the philosopher's stone, sure you will no longer complain of bad times, or the difficulty of paying taxes.

"IV. This doctrine, my friends, is reason and wisdom: but, after all, do not depend too much upon your own industry, and frugality, and prudence, though excellent things; for they may all be blasted, without the blessing of Heaven; and, therefore, ask that blessing humbly, and be not uncharitable to those that at present seem to want it, but comfort and help them. Remember, Job suffered, and was afterwards prosperous.

"And now, to conclude, *Experience keeps a dear school, but fools will learn in no other*, as *Poor Richard* says, and scarce in that; for, it is true, *We may give advice, but we cannot give conduct.* However, remember this, *They that will not be counselled, cannot be helped;* and further, that *If you will not hear Reason, she will surely rap your knuckles*, as *Poor Richard* says."

Thus the old gentleman ended his harangue. The people heard it and approved the doctrine; and immediately practised the contrary, just as if it had been a common sermon; for the auction opened, and they began to buy extravagantly.——I found the good man had thoroughly studied my almanacks, and digested all I had dropt on these topics during the course of twenty-five years. The frequent mention he made of me must have tired any one else; but my vanity was wonderfully delighted with it, though I was conscious that not a tenth part of the wisdom was my own which he ascribed to me, but rather the gleanings that I had made of the sense of all ages and nations. However, I resolved to be the better for the echo of it; and, though I had at first determined to buy stuff for a new coat, I went away resolved to wear my old one a little longer. Reader, if thou wilt do the same, thy profit will be as great as mine. I am, as ever, thine to serve thee,

RICHARD SAUNDERS.

A THOUGHT CONCERNING THE MEDALS THAT ARE TO BE STRUCK BY ORDER OF CONGRESS.

THE forming dies in steel, to strike medals or money, is generally with the intention of making a great number of the same form.

The engraving of those dies in steel is, from the hardness of the substance, very difficult and expensive; but once engraved, the great number to be easily

produced afterwards by stamping justifies the expense, it being but small when divided among a number.

Where only one medal of a kind is wanted, it seems an unthrifty way to form dies for it in steel, to strike the two sides of it, the whole expense of the dies resting on that medal.

It was by this means that the medal voted by congress for M. Fleury cost one hundred guineas. When an engraving of the same figures and inscriptions might have been beautifully done on a plate of silver of the same size for two guineas.

The ancients, when they ordained a medal to record the memory of any laudable action, and do honor to the performer of that action, struck a vast number, and used them as money. By this means the honor was extended through their own and neighboring nations: every man who received or paid a piece of such money was reminded of the virtuous action, the person who performed it, and the reward attending it: and the number gave such security to this kind of monuments, against perishing or being forgotten, that some of each of them exist to this day, though more than two thousand years old, and being now copied into books by the art of engraving and printing, are not only exceedingly multiplied, but likely to remain some thousands of years longer.

I therefore wish the medals of congress were ordered to be money, and so contrived as to be convenient money, by being in value aliquot parts of a dollar.

Copper coins are wanting in America for small change. We have none but those of the king of England. After one silver or gold medal is struck from the dies, for the person to be honored, they may be usefully employed in striking copper money, or in some cases small silver.

The nominal value of the pieces might be a little more than the real, to prevent their being melted down, but not so much more as to be an encouragement to counterfeiting. B. F.

PRECAUTIONS TO BE USED BY THOSE WHO ARE ABOUT TO UNDERTAKE A SEA VOYAGE.

When you intend to take a long voyage, nothing is better than to keep it a secret till the moment of your departure. Without this, you will be continually interrupted and tormented by visits from friends and acquaintances, who not

only make you lose your valuable time, but make you forget a thousand things which you wish to remember; so that when you are embarked, and fairly at sea, you recollect, with much uneasiness, affairs which you have not terminated, accounts that you have not settled, and a number of things which you proposed to carry with you, and which you find the want of every moment. Would it not be attended with the best consequences to reform such a custom, and to suffer a traveller, without deranging him, to make his preparations in quietness, to set apart a few days when these are finished, to take leave of his friends, and to receive their good wishes for his happy return?

It is not always in one's power to choose a captain; though great part of the pleasure and happiness of the passage depends upon this choice, and though one must for a time be confined to his company, and be in some measure under his command. If he is a social sensible man, obliging, and of a good disposition, you will be so much the happier. One sometimes meets with people of this description, but they are not common; however, if yours be not of this number, if he be a good seaman, attentive, careful, and active in the management of his vessel, you must dispense with the rest, for these are essential qualities.

Whatever right you may have, by your agreement with him, to the provisions he has taken on board for the use of the passengers, it is always proper to have some private store, which you may make use of occasionally. You ought, therefore, to provide good water, that of the ship being often bad; but you must put it into bottles, without which you cannot expect to preserve it sweet. You ought also to carry with you good tea, ground coffee, chocolate, wine of that sort which you like best, cyder, dried raisins, almonds, sugar, capillaire, citrons, rum, eggs dipped in oil, portable soup, bread twice baked. With regard to poultry, it is almost useless to carry any with you, unless you resolve to undertake the office of feeding and fattening them yourself. With the little care which is taken of them on board ship, they are almost all sickly, and their flesh is as tough as leather.

All sailors entertain an opinion, which has undoubtedly originated formerly from a want of water, and when it has been found necessary to be sparing of it, that poultry never know when they have drank enough; and that when water is given them at discretion, they generally kill themselves by drinking beyond measure. In consequence of this opinion, they give them water only once in two days, and even then in small quantities: but as they pour this water into

troughs inclining on one side, which occasions it to run to the lower part, it thence happens that they are obliged to mount one upon the back of another in order to reach it; and there are some which cannot even dip their beaks in it. Thus continually tantalised and tormented by thirst, they are unable to digest their food, which is very dry, and they soon fall sick and die. Some of them are found thus every morning, and are thrown into the sea; whilst those which are killed for the table are scarcely fit to be eaten. To remedy this inconvenience, it will be necessary to divide their troughs into small compartments, in such a manner that each of them may be capable of containing water; but this is seldom or never done. On this account sheep and hogs are to be considered as the best fresh provision that one can have at sea; mutton there being in general very good, and pork excellent.

It may happen that some of the provisions and stores which I have recommended may become almost useless, by the care which the captain has taken to lay in a proper stock: but in such a case you may dispose of it to relieve the poor passengers, who, paying less for their passage, are stowed among the common sailors, and have no right to the captain's provisions, except such part of them as is used for feeding the crew. These passengers are sometimes sick, melancholy, and dejected; and there are often women and children among them, neither of whom have any opportunity of procuring those things which I have mentioned, and of which, perhaps, they have the greatest need. By distributing amongst them a part of your superfluity, you may be of the greatest assistance to them. You may restore their health, save their lives, and in short render them happy; which always affords the liveliest sensation to a feeling mind.

The most disagreeable thing at sea is the cookery; for there is not, properly speaking, any professed cook on board. The worst sailor is generally chosen for that purpose, who for the most part is equally dirty. Hence comes the proverb used among the English sailors, that *God sends meat and the devil sends cooks.* Those, however, who have a better opinion of Providence, will think otherwise. Knowing that sea air, and the exercise or motion which they receive from the rolling of the ship, have a wonderful effect in whetting the appetite, they will say that Providence has given sailors bad cooks to prevent them from eating too much; or that, knowing they would have bad cooks, he has given them a good appetite to prevent them from dying with hunger. However, if you have no confidence in these succors of Providence, you may

yourself, with a lamp and a boiler, by the help of a little spirits of wine, prepare some food, such as soup, hash, &c. A small oven made of tin plate is not a bad piece of furniture: your servant may roast in it a piece of mutton or pork. If you are ever tempted to eat salt beef, which is often very good, you will find that cyder is the best liquor to quench the thirst generally caused by salt meat or salt fish. Sea biscuit, which is too hard for the teeth of some people, may be softened by steeping it; but bread double baked is the best; for being made of good loaf-bread cut into slices, and baked a second time, it readily imbibes water, becomes soft, and is easily digested: it consequently forms excellent nourishment, much superior to that of biscuit, which has not been fermented.

I must here observe, that this double-baked bread was originally the real biscuit prepared to keep at sea; for the word *biscuit*, in French, signifies twice baked.[1] Pease often boil badly, and do not become soft; in such a case, by putting a two-pound shot into the kettle, the rolling of the vessel, by means of this bullet, will convert the pease into a kind of porridge, like mustard.

Having often seen soup, when put upon the table at sea in broad flat dishes, thrown out on every side by the rolling of the vessel, I have wished that our tinmen would make our soup-basons with divisions or compartments, forming small plates, proper for containing soup for one person only. By this disposition, the soup, in an extraordinary roll, would not be thrown out of the plate, and would not fall into the breasts of those who are at table, and scald them. Having entertained you with these things of little importance, permit me now to conclude with some general reflections upon navigation.

When navigation is employed only for transporting necessary provisions from one country, where they abound, to another where they are wanting; when by this it prevents famines, which were so frequent and so fatal before it was invented and became so common; we cannot help considering it as one of those arts which contribute most to the happiness of mankind. But when it is employed to transport things of no utility, or articles merely of luxury, it is then uncertain whether the advantages resulting from it are sufficient to counterbalance the misfortunes it occasions by exposing the lives of so many individuals upon the vast ocean. And when it is used to plunder vessels and transport slaves, it is evidently only the dreadful means of increasing those calamities which afflict human nature.

---

[1] It is derived from *bis* again, and *cuit* baked.

One is astonished to think on the number of vessels and men who are daily exposed in going to bring tea from China, coffee from Arabia, and sugar and tobacco from America; all commodities which our ancestors lived very well without. The sugar-trade employs nearly a thousand vessels; and that of tobacco almost the same number. With regard to the utility of tobacco, little can be said; and, with regard to sugar, how much more meritorious would it be to sacrifice the momentary pleasure which we receive from drinking it once or twice a day in our tea, than to encourage the numberless cruelties that are continually exercised in order to procure it us!

A celebrated French moralist said, that, when he considered the wars which we foment in Africa to get negroes, the great number who of course perish in these wars; the multitude of those wretches who die in their passage, by disease, bad air, and bad provisions; and lastly, how many perish by the cruel treatment they meet with in a state of slavery; when he saw a bit of sugar, he could not help imagining it to be covered with spots of human blood. But, had he added to these considerations the wars which we carry on against one another, to take and retake the islands that produce this commodity, he would not have seen the sugar simply spotted with blood, he would have beheld it entirely tinged with it.

These wars make the maritime powers of Europe, and the inhabitants of Paris and London, pay much dearer for their sugar than those of Vienna, though they are almost three hundred leagues distant from the sea. A pound of sugar, indeed, costs the former not only the price which they give for it, but also what they pay in taxes, necessary to support the fleets and armies which serve to defend and protect the countries that produce it.

INFORMATION TO THOSE WHO WOULD REMOVE TO AMERICA.

[*Referred to in Private Correspondence, part I. Letter to B. Vaughan, Esq. July* 26, 1784.]

MANY persons in Europe having directly or by letters expressed to the writer of this, who is well acquainted with North America, their desire of transporting and establishing themselves in that country; but who appear to him to have formed, through ignorance, mistaken ideas and expectations of

what is to be obtained there; he thinks it may be useful, and prevent inconvenient, expensive, and fruitless removals and voyages of improper persons, if he gives some clearer and truer notions of that part of the world than appear to have hitherto prevailed.

He finds it is imagined by numbers, that the inhabitants of North America are rich, capable of rewarding, and disposed to reward all sorts of ingenuity; that they are at the same time ignorant of all the sciences; and consequently that strangers possessing talents in the belles lettres, fine arts, &c. must be highly esteemed, and so well paid as to become easily rich themselves; that there are also abundance of profitable offices to be disposed of, which the natives are not qualified to fill; and that having few persons of family among them, strangers of birth must be greatly respected, and of course easily obtain the best of those offices which will make all their fortunes: that the governments too, to encourage emigrations from Europe, not only pay the expense of personal transportation, but give lands gratis to strangers with negroes to work for them, utensils of husbandry, and stocks of cattle. These are all wild imaginations; and those who go to America with expectations founded upon them, will surely find themselves disappointed.

The truth is, that though there are in that country few people so miserable as the poor of Europe, there are also very few that in Europe would be called rich: it is rather a general happy mediocrity that prevails. There are few great proprietors of the soil, and few tenants; most people cultivate their own lands, or follow some handicraft or merchandise; very few rich enough to live idly upon their rents or incomes, or to pay the high prices given in Europe for paintings, statues, and the other works of art that are more curious than useful. Hence the natural geniuses that have arisen in America with such talents have universally quitted that country for Europe, where they can be more suitably rewarded. It is true that letters and mathematical knowledge are in esteem there, but they are at the same time more common than is apprehended; there being already existing nine colleges or universities, viz. four in New England, and one in each of the provinces of New York, New Jersey, Pennsylvania, Maryland, and Virginia, all furnished with learned professors; besides a number of smaller academies. These educate many of their youth in the languages and those sciences that qualify men for the professions of divinity, law, or physic. Strangers are indeed by no means excluded from exercising those professions, and the quick increase of inhabitants everywhere gives them

chance of employ, which they have in common with the natives. Of civil offices or employments there are few; no superfluous ones as in Europe; and it is a rule established in some of the states, that no office should be so profitable as to make it desirable. The 36th article of the constitution of Pennsylvania runs expressly in these words: "As every freeman to preserve his independence (if he has not a sufficient estate) ought to have some profession, calling, trade, or farm, whereby he may honestly subsist, there can be no necessity for nor use in establishing, offices of profit; the usual effects of which are dependence and servility unbecoming freemen, in the possessors and expectants; faction, contention, corruption, and disorder, among the people. Wherefore, whenever an office, through increase of fees or otherwise, becomes so profitable as to occasion many to apply for it, the profits ought to be lessened by the legislature." These ideas prevailing more or less in all the United States, it cannot be worth any man's while, who has a means of living at home, to expatriate himself in hopes of obtaining a profitable civil office in America; and as to military offices, they are at an end with the war, the armies being disbanded. Much less is it advisable for a person to go thither, who has no other quality to recommend him but his birth. In Europe indeed it has its value, but it is a commodity that cannot be carried to a worse market than to that of America, where people do not inquire concerning a stranger, *What is he?* but, *What can he* DO? If he has any useful art he is welcome, and if he exercises it and behaves well, he will be respected by all that know him; but a mere man of quality, who on that account wants to live upon the public by some office or salary, will be despised and disregarded. The husbandman is in honor there, and even the mechanic, because their employments are useful. The people have a saying, that "God Almighty is himself a mechanic, the greatest in the universe, and he is respected and admired more for the variety, ingenuity, and usefulness of his handyworks, than for the antiquity of his family." They are pleased with the observation of a negro, and frequently mention it, that "Boccarorra" (meaning the white men) "make de black man workee, make de horse workee, make de ox workee, make ebery ting workee, only de hog. He, de hog, no workee; he eat, he drink, he walk about about, he go to sleep when he please, *he libb like a gentleman.*" According to these opinions of the Americans, one of them would think himself more obliged to a genealogist who could prove for him, that his ancestors and relations for ten generations had been ploughmen, smiths, car-

penters, turners, weavers, tanners, or even shoemakers, and consequently that they were useful members of society; than if he could only prove that they were gentlemen, doing nothing of value, but living idly on the labor of others, mere *fruges consumere nati*,[1] and otherwise *good* for *nothing*, till by their death, their estates, like the carcase of the negro's gentleman-hog, come to be *cut up*.

With regard to encouragements for strangers, they are really only what are derived from good laws and liberty. Strangers are welcome because there is room enough for them all, and therefore the old inhabitants are not jealous of them; the laws protect them sufficiently, so that they have no need of the patronage of great men; and every one will enjoy securely the profits of his industry. But if he does not bring a fortune with him, he must work and be industrious to live. One or two years' residence gives him all the rights of a citizen; but the government does not at present, whatever it may have done in former times, hire people to become settlers, by paying their passages, giving lands, negroes, utensils, stock, or any other kind of emolument whatsoever. In short, America is the land of labor, and by no means what the English call *Lubberland*, and the French *Pays de Cocagne*, where the streets are said to be paved with half-peck loaves, the houses tiled with pancakes, and where the fowls fly about ready roasted, crying, *come eat me!*

Who, then, are the kind of persons to whom an emigration to America may be advantageous? and what are the advantages they may reasonably expect?

Land being cheap in that country, from the vast forests still void of inhabitants, and not likely to be occupied in an age to come, insomuch that the propriety of an hundred acres of fertile soil full of wood may be obtained near the frontiers in many places for eight or ten guineas, hearty young laboring men, who understand husbandry of corn and cattle, which is nearly the same in that country as in Europe, may easily establish themselves there. A little money saved of the good wages they receive there while they work for others, enables them to buy the land and begin their plantation, in which they are assisted by the good-will of their neighbors and some credit. Multitudes of poor people from England, Ireland, Scotland, and Germany, have by this means in a few years become wealthy farmers, who in their own countries, where all the lands

---

[1] There are a number of us born,
Merely to eat up the corn. WATTS.

are fully occupied, and the wages of labor low, could never have emerged from the mean condition wherein they were born.

From the salubrity of the air, the healthiness of the climate, the plenty of good provisions, and the encouragement to early marriages, by the certainty of subsistence in cultivating the earth, the increase of inhabitants by natural generation is very rapid in America, and becomes more so by the accession of strangers; hence there is a continual demand for more artisans of all the necessary and useful kinds to supply those cultivators of the earth with houses and with furniture, and utensils of the grosser sorts, which cannot so well be brought from Europe. Tolerably good workmen in any of those mechanic arts are sure to find employ, and to be well paid for their work, there being no restraints preventing strangers from exercising any art they understand, nor any permission necessary. If they are poor, they begin first as servants, or journeymen; and if they are sober, industrious, and frugal, they soon become masters, establish themselves in business, marry, raise families, and become respectable citizens.

Lastly, persons of moderate fortunes and capitals, who having a number of children to provide for, are desirous of bringing them up to industry, and to secure estates for their posterity, have opportunities of doing it in America, which Europe does not afford. There they may be taught and practise profitably mechanic arts, without incurring disgrace on that account; but on the contrary, acquiring respect by such abilities. There small capitals laid out in lands, which daily become more valuable by the increase of people, affords a solid prospect of ample fortunes thereafter for those children. The writer of this has known several large tracts of land bought on what was then the frontier of Pennsylvania, for ten pounds per hundred acres, which, after 20 years, when the settlement had been extended far beyond them, sold readily, without any improvement made upon them, for three pounds per acre. The acre in America is the same with the English acre or the acre of Normandy.

Those who desire to understand the state of government in America, would do well to read the Constitutions of the several states, and the Articles of Confederation that bind the whole together for general purposes, under the direction of one assembly called the Congress. These Constitutions have been printed by order of Congress in America; two editions of them have also been printed in London, and a good translation of them into French has lately been published at Paris.

Several of the princes of Europe having of late years, from an opinion of advantage to arise by producing all commodities and manufactures within their own dominions, so as to diminish or render useless their importations, have endeavored to entice workmen from other countries by high salaries, privileges, &c. Many persons pretending to be skilled in various manufactures, imagining that America must be in want of them, and that Congress would probably be disposed to imitate the princes above mentioned, have proposed to go over on condition of having their passages paid, lands given, salaries appointed, exclusive privileges for terms of years, &c. &c. Such persons, on reading the Articles of Confederation, will find that the Congress have no power committed to them, or money put into their hands for such purposes; and that if any such encouragement is given, it must be by the government of some separate state. This however has rarely been done in America; and when it has been done it has rarely succeeded, so as to establish a manufacture which the country was not yet so ripe for as to encourage private persons to set it up, labor being generally too dear there and hands difficult to be kept together, every one desiring to be a master, and the cheapness of lands inclining many to leave trades for agriculture. Some indeed have met with success and are carried on with advantage; but they are generally such as require only a few hands, or wherein great part of the work is performed by machines. Things that are bulky and of so small value as not well to bear the expense of freight, may often be made cheaper in the country than they can be imported; and the manufacture of such things will be profitable wherever there is a sufficient demand. The farmers in America produce indeed a good deal of wool and flax; and none is exported; it is all worked up; but it is in the way of domestic manufacture for the use of the family. The buying up quantities of wool and flax with the design to employ spinners, weavers, &c. and form great establishments, producing quantities of linen and woollen goods for sale, has been several times attempted in different provinces; but those projects have generally failed, goods of equal value being imported cheaper. And when the governments have been solicited to support such schemes by encouragements in money, or by imposing duties on importation of such goods, it has been generally refused, on this principle, that if the country is ripe for the manufacture, it may be carried on by private persons to advantage; and if not, it is a folly to think of forcing nature. Great establishments of manufacture require great numbers of poor to do the work for small wages; these poor are to be found in Europe, but

will not be found in America, till the lands are all taken up and cultivated, and the excess of people who cannot get land want employment. The manufacture of silk, they say, is natural in France, as that of cloth in England, because each country produces in plenty the first material: but if England will have a manufacture of silk as well as that of cloth, and France one of cloth as well as that of silk, these unnatural operations must be supported by mutual prohibitions, or higher duties on the importation of each other's goods, by which means the workmen are enabled to tax the home consumer by greater prices, while the higher wages they receive makes them neither happier nor richer, since they only drink more, and work less. Therefore the governments in America do nothing to encourage such projects. The people by this means are not imposed on either by the merchant or mechanic: if the merchant demands too much profit on imported shoes, they buy of the shoemaker; and if he asks too high a price, they take them of the merchant. Thus the two professions are checks on each other. The shoemaker, however, has on the whole a considerable profit upon his labor in America, beyond what he had in Europe, as he can add to his price a sum nearly equal to all the expense of freight and commission, risk or insurance, &c. necessarily charged by the merchant. And the case is the same with the workmen in every other mechanic art. Hence it is that artisans generally live better and more easily in America than in Europe, and such as are good economists make a comfortable provision for age and for their children: such may therefore remove with advantage to America.

In the old long settled countries of Europe all arts, trades, professions, farms, &c. are so full, that it is difficult for a poor man who has children, to place them where they may gain, or learn to gain a decent livelihood. The artisans who fear creating future rivals in business, refuse to take apprentices, but upon conditions of money, maintenance, and the like, which the parents are unable to comply with. Hence the youth are brought up in ignorance of every gainful art, and obliged to become soldiers, or servants, or thieves, for a subsistence. In America the rapid increase of inhabitants takes away that fear of rivalship, and artisans willingly receive apprentices from the hope of profit by their labor during the remainder of the time stipulated after they shall be instructed. Hence it is easy for poor families to get their children instructed; for the artisans are so desirous of apprentices, that many of them will even give money to the parents to have boys from ten to fifteen years of age bound apprentices to them till the age of twenty-one; and many poor parents have, by

that means, on their arrival in the country, raised money enough to buy land sufficient to establish themselves, and to subsist the rest of their family by agriculture. These contracts for apprentices are made before a magistrate, who regulates the agreement according to reason and justice, and having in view the formation of a future useful citizen, obliges the master to engage by a written indenture, not only that during the time of service stipulated the apprentice shall be duly provided with meat, drink, apparel, washing and lodging, and at its expiration with a complete new suit of clothes, but also that he shall be taught to read, write, and cast accounts, and that he shall be well instructed in the art or profession of his master, or some other, by which he may afterwards gain a livelihood,' and be able in his turn to raise a family. A copy of this indenture is given to the apprentice or his friends, and the magistrate keeps a record of it, to which recourse may be had in case of failure by the master in any point of performance. This desire among the masters to have more hands employed in working for them, induces them to pay the passages of young persons, of both sexes, who on their arrival agree to serve them, one, two, three, or four years; those who have already learnt a trade agreeing for a shorter time, in proportion to their skill and the consequent immediate value of their service; and those who have none, agreeing for a longer term, in consideration of being taught an art their poverty would not permit them to acquire in their own country.

The almost general mediocrity of fortune that prevails in America obliging its people to follow some business for subsistence, those vices that arise usually from idleness, are in a great measure prevented. Industry and constant employment are great preservatives of the morals and virtue of a nation. Hence bad examples to youth are more rare in America, which must be a comfortable consideration to parents. To this may be truly added, that serious religion under its various denominations, is not only tolerated but respected and practised. Atheism is unknown there, infidelity rare and secret, so that persons may live to a great age in that country without having their piety shocked by meeting with either an Atheist, or an Infidel. And the Divine Being seems to have manifested his approbation of the mutual forbearance and kindness with which the different sects treat each other, by the remarkable prosperity with which he has been pleased to favor the whole country.

THE INTERNAL STATE OF AMERICA, 1784;

[*Complaint of hard times—and motives for being thankful.*]

THERE is a tradition, that, in the planting of New England, the first settlers met with many difficulties and hardships; as is generally the case when a civilised people attempt establishing themselves in a wilderness country. Being piously disposed, they sought relief from heaven, by laying their wants and distresses before the Lord, in frequent set days of fasting and prayer. Constant meditation and discourse on these subjects kept their minds gloomy and discontented; and, like the children of Israel, there were many disposed to return to that Egypt, which persecution had induced them to abandon. At length, when it was proposed in the assembly to proclaim another fast, a farmer of plain sense rose, and remarked, that the inconveniences they suffered, and concerning which they had so often wearied heaven with their complaints, were not so great as they might have expected, and were diminishing every day as the colony strengthened; that the earth began to reward their labor, and to furnish liberally for their subsistence; that the seas and rivers were found full of fish, the air sweet, the climate healthy; and, above all, that they were there in the full enjoyment of liberty, civil and religious: he therefore thought, that reflecting and conversing on these subjects would be more comfortable, as tending more to make them contented with their situation; and that it would be more becoming the gratitude they owed to the Divine Being, if, *instead of a fast, they should proclaim a thanksgiving*. His advice was taken; and from that day to this they have, in every year, observed circumstances of public felicity sufficient to furnish employment for a thanksgiving day; which is therefore constantly ordered and religiously observed.

I see in the public newspapers of different states frequent complaints of *hard times, deadness of trade, scarcity of money, &c.* It is not my intention to assert or maintain, that these complaints are entirely without foundation. There can be no country or nation existing, in which there will not be some people so circumstanced as to find it hard to gain a livelihood; people who are not in the way of any profitable trade, and with whom money is scarce, because they have nothing to give in exchange for it; and it is always in the power of a small number to make a great clamor. But let us take a cool view of the general

state of our affairs, and perhaps the prospect will appear less gloomy than has been imagined.

The great business of the continent is AGRICULTURE. For one artisan, or merchant, I suppose, we have at least one hundred farmers, by far the greatest part cultivators of their own fertile lands, whence many of them draw not only the food necessary for their subsistence, but the materials of their clothing, so as to need very few foreign supplies; while they have a surplus of productions to dispose of, whereby wealth is gradually accumulated. Such has been the goodness of Divine Providence to these regions, and so favorable the climate, that since the three or four years of hardship in the first settlement of our fathers here, a famine or scarcity has never been heard of amongst us; on the contrary, though some years may have been more, and others less plentiful, there has always been provision enough for ourselves, and a quantity to spare for exportation. And although the crops of last year were generally good, never was the farmer better paid for the part he can spare commerce, as the published price currents abundantly testify. The lands he possesses are also continually rising in value with the increase of population; and, on the whole, he is enabled to give such good wages to those who work for him, that all who are acquainted with the old world must agree, that in no part of it are the laboring poor so generally well fed, well clothed, well lodged, and well paid, as in the United States of America.

If we enter the cities, we find that, since the revolution, the owners of houses and lots of ground have had their interest greatly augmented in value; rents have risen to an astonishing height, and thence encouragement to increase building, which gives employment to an abundance of workmen, as does also the increased luxury and splendor of living of the inhabitants, thus made richer. These workmen all demand and obtain much higher wages than any other part of the world would afford them, and are paid in ready money. This class of people therefore do not, or ought not, to complain of hard times; and they make a very considerable part of the city inhabitants.

At the distance I live from our American fisheries, I cannot speak of them with any degree of certainty; but I have not heard, that the labor of the valuable race of men employed in them is worse paid, or that they meet with less success, than before the revolution. The whale-men indeed have been deprived of one market for their oil; but another, I hear, is opening for them, which it is hoped may be equally advantageous; and the demand is constantly increas-

ing for their spermaceti candles, which therefore bear a higher price than formerly.

There remain the merchants and shopkeepers. Of these, though they make but a small part of the whole nation, the number is considerable, too great indeed for the business they are employed in; for the consumption of goods in every country has its limits; the faculties of the people, that is, their ability to buy and pay, being equal only to a certain quantity of merchandise. If merchants calculate amiss on this proportion, and import too much, they will of course find the sale dull for the overplus, and some of them will say, that trade languishes. They should, and doubtless will, grow wiser by experience, and import less. If too many artificers in town, and farmers from the country, flattering themselves with the idea of leading easier lives, turn shopkeepers, the whole natural quantity of that business divided among them all may afford too small a share for each, and occasion complaints, that trade is dead; these may also suppose, that it is owing to scarcity of money, while in fact, it is not so much from the fewness of buyers, as from the excessive numbers of sellers, that the mischief arises; and, if every shopkeeping farmer and mechanic would return to the use of his plough and working tools, there would remain of widows, and other women, shopkeepers sufficient for the business, which might then afford them a comfortable maintenance.

Whoever has travelled through the various parts of Europe, and observed how small is the proportion of people in affluence or easy circumstances there, compared with those in poverty and misery; the few rich and haughty landlords, the multitude of poor, abject, rack-rented, tythe-paying tenants, and half-paid and half-starved ragged laborers; and views here the happy mediocrity, that so generally prevails throughout the states, where the cultivator works for himself, and supports his family in decent plenty, will, methinks, see an abundant reason to bless Divine Providence for the evident and great difference in our favor, and be convinced, that no nation known to us enjoys a greater share of human felicity.

It is true, that in some of the states there are parties and discords; but let us look back, and ask if we were ever without them? Such will exist wherever there is liberty; and perhaps they help to preserve it. By the collision of different sentiments, sparks of truth are struck out, and political light is obtained. The different factions, which at present divide us, aim all at the public good: the differences are only about the various modes of promoting it.

Things, actions, measures, and objects of all kinds, present themselves to the minds of men in such a variety of lights, that it is not possible we should all think alike at the same time on every subject, when hardly the same man retains at all times the same ideas of it. Parties are therefore the common lot of humanity; and ours are by no means more mischievous or less beneficial than those of other countries, nations, and ages, enjoying in the same degree the great blessing of political liberty.

Some indeed among us are not so much grieved for the present state of our affairs, as apprehensive for the future. The growth of luxury alarms them, and they think we are from that alone in the high road to ruin. They observe, that no revenue is sufficient without economy, and that the most plentiful income of a whole people from the natural productions of their country may be dissipated in vain and needless expenses, and poverty be introduced in the place of affluence. This may be possible. It however rarely happens: for there seems to be in every nation a greater proportion of industry and frugality, which tend to enrich, than of idleness and prodigality, which occasion poverty; so that upon the whole there is a continual accumulation. Reflect what Spain, Gaul, Germany, and Britain were in the time of the Romans, inhabited by people little richer than our savages, and consider the wealth they at present possess, in numerous well-built cities, improved farms, rich movables, magazines stocked with valuable manufactures, to say nothing of plate, jewels, and coined money; and all this, notwithstanding their bad, wasteful, plundering governments, and their mad destructive wars; and yet luxury and extravagant living have never suffered much restraint in those countries. Then consider the great proportion of industrious frugal farmers inhabiting the interior parts of these American states, and of whom the body of our nation consists, and judge whether it is possible that the luxury of our sea-ports can be sufficient to ruin such a country.—If the importation of foreign luxuries could ruin a people, we should probably have been ruined long ago; for the British nation claimed a right, and practised it, of importing among us not only the superfluities of their own production, but those of every nation under heaven; we bought and consumed them, and yet we florished and grew rich. At present our independent governments may do what we could not then do, discourage by heavy duties, or prevent by heavy prohibitions, such importations, and thereby grow richer; if, indeed, which may admit of dispute, the desire of adorning ourselves with fine clothes, possessing fine furniture, with elegant houses, &c. is not, by

strongly inciting to labor and industry, the occasion of producing a greater value than is consumed in the gratification of that desire.

The agriculture and fisheries of the United States are the great sources of our increasing wealth. He that puts a seed into the earth is recompensed, perhaps, by receiving forty out of it; and he who draws a fish out of our water draws up a piece of silver.

Let us (and there is no doubt but we shall) be attentive to these, and then the power of rivals, with all their restraining and prohibiting acts, cannot much hurt us. We are sons of the earth and seas, and like Antæus in the fable, if in wrestling with a Hercules, we now and then receive a fall, the touch of our parents will communicate to us fresh strength and vigor to renew the contest.

REMARKS CONCERNING THE SAVAGES OF NORTH AMERICA, 1784.

SAVAGES we call them, because their manners differ from ours, which we think the perfection of civility. They think the same of theirs.

Perhaps if we could examine the manners of different nations with impartiality, we should find no people so rude as to be without any rules of politeness, nor any so polite as not to have some remains of rudeness.

The Indian men when young, are hunters and warriors; when old, counsellors; for all their government is by counsel of the sages; there is no force, there are no prisons, no officers to compel obedience, or inflict punishment. Hence, they generally study oratory; the best speaker having the most influence. The Indian women till the ground, dress the food, nurse and bring up the children, and preserve and hand down to posterity the memory of public transactions. The employments of men and women are accounted natural and honorable; having few artificial wants, they have abundance of leisure for improvement by conversation. Our laborious manner of life compared with theirs, they esteem slavish and base; and the learning on which we value ourselves, they regard as frivolous and useless. An instance of this occurred at the treaty of Lancaster in Pennsylvania, anno 1744, between the government of Virginia and the Six Nations. After the principal business was settled, the commissioners from Virginia acquainted the Indians by a speech, that there was at Williamsburg a college, with a fund for educating youth; and that if the

Six Nations would send half a dozen of their young lads to that college, the government would take care they should be well provided for, and instructed in all the learning of the white people. It is one of the Indian rules of politeness not to answer a public proposition on the same day that it is made; they think it would be treating it as a light matter, and that they show it respect by taking time to consider it, as of a matter important. They therefore deferred their answer till the day following; when their speaker began by expressing their deep sense of the kindness of the Virginian government in making them that offer; "For we know," says he, "that you highly esteem the kind of learning taught in those colleges, and that the maintenance of our young men with you, would be very expensive to you. We are convinced therefore that you mean to do us good by your proposal, and we thank you heartily. But you who are wise must know, that different nations have different conceptions of things, and you will therefore not take it amiss if our ideas of this kind of education happen not to be the same with yours. We have had some experience of it: several of our young people were formerly brought up at the colleges of the northern provinces; they were instructed in all your sciences; but when they came back to us they were bad runners, ignorant of every means of living in the woods, unable to bear either cold or hunger, knew neither how to build a cabbin, take a deer, or kill an enemy, spoke our language imperfectly; were therefore neither fit for hunters, warriors, or counsellors; they were totally good for nothing. We are however not the less obliged by your kind offer, though we decline accepting it; and to show our grateful sense of it, if the gentlemen of Virginia will send us a dozen of their sons, we will take great care of their education, instruct them in all we know, and *make men of them.*"

Having frequent occasions to hold public councils, they have acquired great order and decency in conducting them. The old men sit in the foremost ranks, the warriors in the next, and the women and children in the hindmost. The business of the women is to take exact notice of what passes, imprint it in their memories (for they have no writing), and communicate it to their children. They are the records of the council, and they preserve traditions of the stipulations in treaties 100 years back, which, when we compare with our writings, we always find exact. He that would speak, rises: the rest observe a profound silence. When he has finished, and sits down, they leave him five or six minutes to recollect, that if he has omitted any thing he intended to say, or has any thing to add, he may rise again and deliver it. To interrupt another,

even in common conversation, is reckoned highly indecent. How different this is from the conduct of a polite British House of Commons, where scarce a day passes without some confusion that makes the speaker hoarse in calling to order; and how different from the mode of conversation in the polite companies of Europe, where, if you do not deliver your sentence with great rapidity, you are cut off in the middle of it by the impatient loquacity of those you converse with, and never suffered to finish it.

The politeness of these savages in conversation is, indeed, carried to excess, since it does not permit them to contradict or deny the truth of what is asserted in their presence; by this means they indeed avoid disputes, but then it becomes difficult to know their minds, or what impression you make upon them. The missionaries who have attempted to convert them to Christianity, all complain of this as one of the greatest difficulties of their mission. The Indians hear with patience the truths of the gospel explained to them, and give their usual tokens of assent or approbation: you would think they were convinced. No such matter—it is mere civility. A Swedish minister having assembled the chiefs of the Susquehannah Indians, made a sermon to them, acquainting them with the principal historical facts on which our religion is founded; such as the fall of our first parents by eating an apple, the coming of Christ to repair the mischief, his miracles and suffering, &c. When he had finished, an Indian orator stood up to thank him. "What you have told us," says he, "is all very good. It is bad to eat apples. It is better to make them all into cyder. We are much obliged by your kindness in coming so far to tell us these things, which you have heard from your mothers; in return, I will tell you some of those we have heard from ours. In the beginning our fathers had only the flesh of animals to subsist on: and, if their hunting was unsuccessful, they were starving. Two of our young hunters having killed a deer, made a fire in the woods to broil some part of it. When they were about to satisfy their hunger, they beheld a beautiful young woman descend from the clouds, and seat herself on that hill which you see yonder among the blue mountains. They said to each other, it is a spirit that, perhaps, has smelt our broiling venison, and wishes to eat of it: let us offer some to her. They presented her with the tongue: she was pleased with the taste of it, and said, your kindness shall be rewarded. Come to this place after thirteen moons, and you shall find something that will be of great benefit in nourishing you and your children to the latest generations. They did so, and to their great surprise found

plants they had never seen before, but which, from that ancient time, have been constantly cultivated among us to our great advantage. Where her right hand had touched the ground, they found maize; where her left hand had touched it, they found kidney-beans; and, where her backside had rested on it, they found tobacco." The good missionary, disgusted with this idle tale, said, "What I delivered to you were sacred truths; but what you tell me is mere fable, fiction, and falsehood." The Indian, offended, replied, "My brother, it seems your friends have not done you justice in your education; they have not well instructed you in the rules of common civility. You saw that we, who understand and practise those rules, believed all your stories: why do you refuse to believe ours?"

When any of them come into our towns, our people are apt to crowd round them, gaze upon them, and incommode them where they desire to be private; this they esteem great rudeness, and the effect of want of instruction in the rules of civility and good manners. "We have," say they, "as much curiosity as you, and when you come into our towns we wish for opportunities of looking at you; but for this purpose we hide ourselves behind bushes where you are to pass, and never intrude ourselves into your company."

Their manner of entering one another's villages has likewise its rules. It is reckoned uncivil in travelling strangers to enter a village abruptly, without giving notice of their approach. Therefore, as soon as they arrive within hearing, they stop and halloo, remaining there till invited to enter. Two old men usually come out to them, and lead them in. There is, in every village, a vacant dwelling called the stranger's house. Here they are placed while the old men go round from hut to hut, acquainting the inhabitants that strangers are arrived, who are probably hungry and weary, and every one sends them what they can spare of victuals, and skins to repose on. When the strangers are refreshed, pipes and tobacco are brought; and then, not before, conversation begins, with inquiries who they are, whither bound, what news, &c.; and it usually ends with offers of service, if the strangers have occasion for guides, or any necessaries for continuing their journey; and nothing is exacted for the entertainment.

The same hospitality, esteemed among them as a principal virtue, is practised by private persons, of which Conrad Weiser, our interpreter, gave me the following instance. He had been naturalised among the Six Nations, and spoke well the Mohock language. In going through the Indian country, to

carry a message from our governor to the council at Onondaga, he called at the habitation of Canasetego, an old acquaintance, who embraced him, spread furs for him to sit on, placed before him some boiled beans and venison, and mixed some rum and water for his drink. When he was well refreshed, and had lit his pipe, Canasetego began to converse with him, asked him how he had fared the many years since they had seen each other, whence he then came, what occasioned the journey, &c. &c. Conrad answered all his questions; and, when the discourse began to flag, the Indian, to continue it, said:—"Conrad, you have lived long among the white people, and know something of their customs. I have been sometimes at Albany, and have observed that once in seven days they shut up their shops, and assemble all in the great house; tell me, what is it for? what do they do there?" "They meet there," said Conrad, "to hear and learn good things." "I do not doubt," said the Indian, "that they tell you so; they have told me the same; but I doubt the truth of what they say, and I will tell you my reasons. I went lately to Albany to sell my skins, and buy blankets, knives, powder, rum, &c. You know I used generally to deal with Hans Hanson, but I was a little inclined this time to try some other merchant; however, I called first upon Hans, and asked him what he would give for beaver. He said he would not give more than four shillings a pound; 'but,' said he, 'I cannot talk on business now; this is the day when we meet together to learn good things, and I am going to the meeting.' So I thought to myself, since we cannot do any business to-day, I may as well go to the meeting too; and I went with him. There stood up a man in black, and began to talk to the people very angrily. I did not understand what he said; but, perceiving that he looked much at me and at Hanson, I imagined he was angry at seeing me there; so I went out, sat down near the house, struck fire, and lit my pipe, waiting till the meeting should break up. I thought too that the man had mentioned something of beaver, and I suspected it might be the subject of their meeting. So, when they came out, I accosted my merchant, 'Well, Hans,' said I, 'I hope you have agreed to give more than four shillings a pound.' 'No,' said he, 'I cannot give so much: I cannot give more than three shillings and sixpence.' I then spoke to several other dealers, but they all sung the same song,—'three and sixpence—three and sixpence.' This made it clear to me that my suspicion was right; and that whatever they pretend of meeting to learn good things, the real purpose was to consult how to cheat Indians in the price of

beaver. Consider but a little, Conrad, and you must be of my opinion. If they met so often to learn good things, they would certainly have learnt some before this time: but they are still ignorant. You know our practice: if a white man, in travelling through our country, enters one of our cabins, we all treat him as I treat you; we dry him if he is wet, we warm him if he is cold, we give him meat and drink, that he may allay his thirst and hunger, and spread soft furs for him to rest and sleep on. We demand nothing in return.[1] But, if I go into a white man's house at Albany, and ask for victuals and drink, they say, 'Where is your money?' and, if I have none, they say, 'Get out, you Indian dog!' You see they have not yet learnt those little good things that we need no meetings to be instructed in, because our mothers taught them to us when we were children; and, therefore, it is impossible their meeting should be, as they say, for any such purpose, or have any such effect: they are only to contrive *the cheating of Indians in the price of beaver.*"

OBSERVATIONS ON MAYZ, OR INDIAN CORN.

It is remarked in North America, that the English farmers when they first arrive there, finding a soil and climate proper for the husbandry they have been accustomed to, and particularly suitable for raising wheat, they despise and neglect the culture of mayz, or Indian corn; but observing the advantage it affords their neighbors the older inhabitants, they by degrees get more and more into the practice of raising it; and the face of the country shows from time to time that the culture of that grain goes on visibly augmenting.

The inducements are, the many different ways in which it may be prepared, so as to afford a wholesome and pleasing nourishment to men, and other animals. 1st. The family can begin to make use of it before the time of full harvest; for the tender green ears, stripped of their leaves, and roasted by a quick fire till the grain is brown, and eaten with a little salt or butter, are a

---

[1] It is remarkable that in all ages and countries, hospitality has been allowed as the virtue of those whom the civilised were pleased to call *barbarians.* The Greeks celebrated the Scythians for it; the Saracens possessed it eminently; and it is to this day the reigning virtue of the wild Arabs. St. Paul too, in his relation of his voyage and shipwreck on the island of Melita, says, *the barbarous people showed us no little kindness: for they kindled a fire, and received us every one, because of the present rain, and because of the cold.*—Acts, chap. 27.

delicacy. 2dly. When the grain is riper and harder, the ears boiled in their leaves and eaten with butter, are also good and agreeable food. The tender green grains dried, may be kept all the year, and, mixed with green *haricots*[1] also dried, make at any time a pleasing dish, being first soaked some hours in water, and then boiled. When the grain is ripe and hard, there are also several ways of using it. One is to soak it all night in a *lessive* or lye, and then pound it in a large wooden mortar with a wooden pestle; the skin of each grain is by that means skinned off, and the farinaceous part left whole, which being boiled swells into a white soft pulp, and eaten with milk, or with butter and sugar, is delicious. The dry grain is also sometimes ground loosely, so as to be broke into pieces of the size of rice, and being winnowed to separate the bran, it is then boiled and eaten with turkies or other fowls, as rice. Ground into a finer meal, they make of it by boiling a hasty-pudding, or *bouilli*, to be eaten with milk, or with butter and sugar; this resembles what the Italians call *polenta*. They make of the same meal with water and salt, a hasty cake, which being stuck against a hoe or other flat iron, is placed erect before the fire, and so baked, to be used as bread. Broth is also agreeably thickened with the same meal. They also parch it in this manner. An iron pot is filled with sand, and set on the fire till the sand is very hot. Two or three pounds of the grain are then thrown in, and well mixed with the sand by stirring. Each grain bursts and throws out a white substance of twice its bigness. The sand is separated by a wire sieve, and returned into the pot, to be again heated and repeat the operation with fresh grain. That which is parched is pounded to a powder in mortars. This being sifted, will keep long for use. An Indian will travel far and subsist long on a small bag of it, taking only six or eight ounces of it per day, mixed with water. The flour of *mayz*, mixed with that of wheat, makes excellent bread, sweeter and more agreeable than that of wheat alone. To feed horses, it is good to soak the grain twelve hours: they mash it easier with their teeth, and it yields them more nourishment. The leaves, stripped off the stalks after the grain is ripe, tied up in bundles when dry, are excellent forage for horses, cows, &c. The stalks pressed like sugar-cane, yield a sweet juice, which being fermented and distilled, yields an excellent spirit; boiled without fermentation, it affords a pleasant syrup. In Mexico, fields are sown with it.

[1] Kidney beans.

thick, that multitudes of small stalks may arise, which being cut from time to time like asparagus, are served in deserts, and their sweet juice extracted in the mouth by chewing them. The meal wetted is excellent food for young chickens, and the whole grain for grown fowls.

SKETCH OF AN ENGLISH SCHOOL,

FOR THE CONSIDERATION OF THE TRUSTEES OF THE PHILADELPHIA ACADEMY.

It is expected that every scholar to be admitted into this school, be at least able to pronounce and divide the syllables in reading, and to write a legible hand. None to be received that are under years of age.

FIRST OR LOWEST CLASS.

Let the first class learn the English Grammar Rules, and at the same time let particular care be taken to improve them in orthography. Perhaps the latter is best done by pairing the scholars; two of those nearest equal in their spelling to be put together. Let these strive for victory; each propounding ten words every day to the other to be spelled. He that spells truly most of the other's words is victor for that day, he that is victor most days in a month, to obtain a prize, a pretty neat book of some kind, useful in their future studies. This method fixes the attention of children extremely to the orthography of words, and makes them good spellers very early. It is a shame for a man to be so ignorant of this little art, in his own language, as to be perpetually confounding words of like sound and different significations; the consciousness of which defect makes some men, otherwise of good learning and understanding, averse to writing even a common letter.

Let the pieces read by the scholars in this class be short; such as Croxall's fables, and little stories. In giving the lesson, let it be read to them: let the meaning of the difficult words in it be explained to them; and let them con over by themselves before they are called to read to the master or usher, who is to take particular care that they do not read too fast, and that they duly observe the stops and pauses. A vocabulary of the most usual difficult words might be formed for their use, with explanations; and they might daily get a few of those words and explanations by heart, which would a little exercise their memories; or at least they might write a number of them in a small book for the purpose, which

would help to fix the meaning of those words in their minds, and at the same time furnish every one with a little dictionary for his future use.

THE SECOND CLASS

To be taught reading with attention, and with proper modulations of the voice, according to the sentiment and the subject.

Some short pieces, not exceeding the length of a Spectator, to be given this class for lessons (and some of the easier Spectators would be very suitable for the purpose). These lessons might be given every night as tasks; the scholars to study them against the morning. Let it then be required of them to give an account, first of the parts of speech, and construction of one or two sentences. This will oblige them to recur frequently to their grammar, and fix its principal rules in their memory. Next, of the intention of the writer, or the scope of the piece, the meaning of each sentence, and of every uncommon word. This would early acquaint them with the meaning and force of words, and give them that most necessary habit of reading with attention.

The master then to read the piece with the proper modulations of voice, due emphasis, and suitable action, where action is required; and put the youth on imitating his manner.

Where the author has used an expression not the best, let it be pointed out; and let his beauties be particularly remarked to the youth.

Let the lessons for reading be varied, that the youth may be made acquainted with good styles of all kinds, in prose and verse, and the proper manner of reading each kind—sometimes a well-told story, a piece of a sermon, a general's speech to his soldiers, a speech in a tragedy, some part of a comedy, an ode, a satire, a letter, blank verse, Hudibrastic, heroic, &c. But let such lessons be chosen for reading, as contain some useful instruction, whereby the understanding or morals of the youth may at the same time be improved.

It is required that they should first study and understand the lessons, before they are put upon reading them properly; to which end each boy should have an English dictionary, to help him over difficulties. When our boys read English to us, we are apt to imagine they understand what they read, because we do, and because it is their mother tongue. But they often read, as parrots speak, knowing little or nothing of the meaning. And it is impossible a reader should give the due modulation to his voice, and pronounce properly, unless his understanding goes before his tongue, and makes him master of the sentiment.

Accustoming boys to read aloud what they do not first understand, is the cause of those even set tones, so common among readers, which, when they have once got a habit of using, they find so difficult to correct; by which means, among fifty readers, we scarcely find a good one. For want of good reading, pieces published with a view to influence the minds of men, for their own or the public benefit, lose half their force. Were there but one good reader in a neighborhood, a public orator might be heard throughout a nation with the same advantages, and have the same effect upon his audience, as if they stood within the reach of his voice.

THE THIRD CLASS

To be taught speaking properly and gracefully; which is near a-kin to good reading, and naturally follows it in the studies of youth. Let the scholars of this class begin with learning the elements of rhetoric from some short system, so as to be able to give an account of the most useful tropes and figures. Let all their bad habits of speaking, all offences against good grammar, all corrupt or foreign accents, and all improper phrases, be pointed out to them. Short speeches from the Romans, or other history, or from the parliamentary debates, might be got by heart, and delivered with the proper action, &c. Speeches and scenes in our best tragedies and comedies (avoiding every thing that could injure the morals of youth) might likewise be got by rote, and the boys exercised in delivering or acting them: great care being taken to form their manner after the truest models.

For their farther improvement, and a little to vary their studies, let them now begin to read history, after having got by heart a short table of the principal epochas in chronology. They may begin with Rollin's ancient and Roman histories, and proceed at proper hours, as they go through the subsequent classes, with the best histories of our own nation and colonies. Let emulation be excited among the boys by giving, weekly, little prizes or other small encouragements to those who are able to give the best account of what they have read, as to time, places, names of persons, &c. This will make them read with attention, and imprint the history well in their memories. In remarking on the history, the master will have fine opportunities of instilling instruction of various kinds, and improving the morals as well as the understandings of youth.

The natural and mechanic history, contained in the Spectacle de la Nature, might also be begun in this class, and continued through the subsequent classes,

by other books of the same kind; for, next to the knowledge of duty, this kind of knowledge is certainly the most useful, as well as the most entertaining. The merchant may thereby be enabled better to understand many commodities in trade; the handicraftsman to improve his business, by new instruments, mixtures, and materials; and frequently hints are given for new manufactures, or new methods of improving land, that may be set on foot greatly to the advantage of a country.

THE FOURTH CLASS

To be taught composition. Writing one's own language well is the next necessary accomplishment after good speaking. It is the writing-master's business to take care that the boys make fair characters, and place them straight and even in the lines: but to form their style, and even to take care that the stops and capitals are properly disposed, is the part of the English master. The boys should be put on writing letters to each other on any common occurrences, and on various subjects, imaginary business, &c. containing little stories, accounts of their late reading, what parts of authors please them, and why; letters of congratulation, of compliment, of request, of thanks, of recommendation, of admonition, of consolation, of expostulation, excuse, &c. In these they should be taught to express themselves clearly, concisely, and naturally, without affected words or high-flown phrases. All their letters to pass through the master's hand, who is to point out the faults, advise the corrections, and commend what he finds right. Some of the best letters published in our own language, as Sir William Temple's, those of Pope and his friends, and some others, might be set before the youth as models, their beauties pointed out and explained by the master, the letters themselves transcribed by the scholar.

Dr. Johnson's Ethices Elementa, or First Principles of Morality, may now be read by the scholars, and explained by the master, to lay a solid foundation of virtue and piety in their minds. And as this class continues the reading of history, let them now, at proper hours, receive some farther instruction in chronology, and in that part of geography (from the mathematical master) which is necessary to understand the maps and globes. They should also be acquainted with the modern names of the places they find mentioned in ancient writers. The exercises of good reading, and proper speaking, still continued at suitable times.

FIFTH CLASS.

To improve the youth in composition, they may now, besides continuing to write letters, begin to write little essays in prose, and sometimes in verse; not to make them poets, but for this reason, that nothing acquaints a lad so speedily with variety of expression as the necessity of finding such words and phrases as will suit the measure, sound, and rhyme of verse, and at the same time well express the sentiment. These essays should all pass under the master's eye, who will point out their faults, and put the writer on correcting them. Where the judgment is not ripe enough for forming new essays, let the sentiments of a Spectator be given, and required to be clothed in the scholar's own words; or the circumstances of some good story, the scholar to find expression. Let them be put sometimes on abridging a paragraph of a diffuse author; sometimes on dilating or amplifying what is wrote more closely. And now let Dr. Johnson's Noetica, or First Principles of Human Knowledge, containing a logic, or art of reasoning, &c. be read by the youth, and the difficulties that may occur to them be explained by the master. The reading of history, and the exercises of good reading and just speaking still continued.

SIXTH CLASS.

In this class, besides continuing the studies of the preceding in history, rhetoric, logic, moral and natural philosophy, the best English authors may be read and explained; as Tillotson, Milton, Locke, Addison, Pope, Swift, the higher papers in the Spectator and Guardian, the best translations of Homer, Virgil, and Horace, of Telemachus, Travels of Cyrus, &c.

Once a-year let there be public exercises in the hall; the trustees and citizens present. Then let fine gilt books be given as prizes to such boys as distinguish themselves and excel the others in any branch of learning, making three degrees of comparison; giving the best prize to him that performs best, a less valuable one to him that comes up next to the best, and another to the third: commendations, encouragement, and advice to the rest; keeping up their hopes, that by industry they may excel another time. The names of those that obtain the prize to be yearly printed in a list.

The hours of each day are to be divided and disposed in such a manner, as that some classes may be with the writing-master, improving their hands; others with the mathematical master, learning arithmetic, accounts, geography, use of

the globes, drawing, mechanics, &c.; while the rest are in the English school, under the English master's care.

Thus instructed, youth will come out of this school fitted for learning any business, calling, or profession, except such wherein languages are required: and, though unacquainted with any ancient or foreign tongue, they will be masters of their own, which is of more immediate and general use, and withal will have attained many other valuable accomplishments: the time usually spent in acquiring those languages, often without success, being here employed in laying such a foundation of knowledge and ability as, properly improved, may qualify them to pass through and execute the several offices of civil life, with advantage and reputation to themselves and country.

OBSERVATIONS

RELATIVE TO THE INTENTIONS OF THE ORIGINAL FOUNDERS OF THE ACADEMY IN PHILADELPHIA. *June*, 1789.

As the English school in the academy has been, and still continues to be, a subject of dispute and discussion among the trustees since the restitution of the charter, and it has been proposed that we should have some regard to the original intention of the founders in establishing that school, I beg leave, for your information, to lay before you what I know of that matter originally, and what I find on the minutes relating to it, by which it will appear how far the design of that school has been adhered to or neglected.

Having acquired some little reputation among my fellow-citizens, by projecting the public library in 1732, and obtaining the subscriptions by which it was established; and by proposing and promoting, with success, sundry other schemes of general utility, in 1749; I was encouraged to hazard another project, that of a public education for our youth. As in the scheme of the library I had provided only for English books, so in this new scheme my ideas went no farther than to procure the means of a good English education. A number of my friends, to whom I communicated the proposal, concurred with me in these ideas; but Mr. Allen, Mr. Francis, Mr. Peters, and some other persons of wealth and learning, whose subscriptions and countenance we should need, being of opinion that it ought to include the learned languages, I submitted my judgment to theirs, retaining however a strong prepossession in favor of my

first plan, and resolving to preserve as much of it as I could, and to nourish the English school by every means in my power.

Before I went about to procure subscriptions, I thought it proper to prepare the minds of the people by a pamphlet, which I wrote, and printed, and distributed with my newspapers, gratis. The title was, *Proposals relating to the Education of Youth in Pennsylvania.* I happen to have preserved one of them; and, by reading a few passages, it will appear how much the English learning was insisted upon in it; and I had good reason to know that this was a prevailing part of the motives for subscribing with most of the original benefactors.[1] I met with but few refusals in soliciting the subscriptions; and the sum

---

[1] That the Rector be a man of good understanding, good morals, diligent and patient, learned in the languages and sciences, and a correct pure speaker and writer of the *English* tongue; to have such tutors under him as shall be necessary.

The English language might be taught by grammar; in which some of our best writers, as *Tillotson, Addison, Pope, Algernon Sidney, Cato's* letters, &c. should be classics: the *styles* principally to be cultivated, being the *clear* and the *concise*. Reading should also be taught, and pronouncing properly, distinctly, emphatically; not with an even tone, which *under-does*, nor a theatrical, which *over-does* nature.

Mr. *Locke*, speaking of *grammar*, p. 252, says, "That to those the greatest part of whose business in this world is to be done with their tongue, and with their pens, it is convenient, if not necessary, that they should speak properly and correctly, whereby they may let their thoughts into other men's minds the more easily, and with the greater impression. Upon this account it is, that any sort of speaking, so as will make him be understood, is not thought enough for a gentleman. He ought to study *grammar*, among the other helps of speaking well; but it *must be* the grammar of his own tongue, of the language he uses, that he may understand his own country speech nicely, and speak it properly, without shocking the ears of those it is addressed to with solecisms and offensive irregularities. And to this purpose *grammar is necessary;* but it is the grammar *only of their own proper tongues*, and to those who would take pains in cultivating their language, and perfecting their styles. Whether all gentlemen should not do this, I leave to be considered, since the want of propriety and grammatical exactness is thought very misbecoming one of that rank, and usually draws on one guilty of such faults, the imputation of having had a lower breeding and worse company than suit with his quality. If this be so (as I suppose it is), it will be matter of wonder, why young gentlemen are forced to learn the grammars of foreign and dead languages, and are never once told of the grammar of their own tongues. They do not so much as know there is any such thing, much less is it made their business to be instructed in it. Nor is their own language ever proposed to them as worthy their care and cultivating, though they have *daily use* of it, and are not seldom in the future course of their lives judged of by their handsome or awkward way of expressing themselves in it. Whereas the languages whose grammars they have been so much employed in, are such as probably they shall scarce ever speak or write; or if upon occasion this should happen, they should

was the more considerable as I had put the contribution on this footing, that it was not to be immediate, and the whole paid at once, but in parts, a fifth

---

be excused for the mistakes and faults they make in it. Would not a *Chinese*, who took notice of this way of breeding, be apt to imagine, that all our young gentlemen were designed to be teachers and professors of the dead languages of foreign countries, and not to be men of business in their own?"

Page 255, the same author adds, "That if grammar ought to be taught at any time, it must be to one that can speak the language already; how else can he be taught the grammar of it? This at least is evident from the practice of the wise and learned nations among the ancients. They made it a *part of education* to cultivate *their own*, not foreign tongues. The *Greeks* counted all other nations barbarous, and had a contempt for their languages. And though the Greek learning grew in credit among the *Romans* towards the end of their commonwealth, yet it was the Roman tongue that was made the study of their youth: *their own* language they were to make use of, and therefore it was *their own* language they were *instructed* and *exercised* in. And p. 281, "There can scarce be a greater defect (says he) in a gentleman, than not to express himself well either in writing or speaking. But yet I think I may ask the reader, whether he doth not know a great many, who live upon their estates, and so, with the name, should have the qualities of gentlemen, who cannot so much as tell a story as they should, much less speak clearly and persuasively in any business. This I think not to be so much their fault as the *fault of their education*." Thus far *Locke*.

Monsieur *Rollin* reckons the neglect of teaching their own tongue a great fault in the *French* universities. He spends great part of his first volume of *Belles Lettres* on that subject; and lays down some excellent rules or methods of teaching *French* to *Frenchmen* grammatically, and making them masters therein, which are very applicable to our language, but too long to be inserted here. He practised them on the youth under his care with great success.

Mr. *Hutchinson*, Dial. p. 297. says, "To perfect them in the knowledge of their mother tongue, they should learn it in the grammatical way, that they not only speak it purely, but be able both to correct their own idiom and afterwards enrich the language on the same foundation."

Dr. *Turnbull*, in his Observations on a liberal Education, says, p. 262, "The *Greeks*, perhaps, made more early advances in the most useful sciences than any youth have done since, chiefly on this account, that they studied no other language but their own. This no doubt saved them very much time; but they *applied themselves carefully* to the study of *their own* language, and were *early* able to speak and write it in *the greatest perfection*. The *Roman* youth, though they learned the *Greek*, did not neglect their own tongue, but studied it more carefully than we now do *Greek* and *Latin*, without giving ourselves any trouble about our own tongue."

Monsieur *Simon*, in an elegant Discourse of his among the Memoirs of the Academy of *Belles Lettres* at *Paris*, speaking of the stress the *Romans* laid on purity of language and graceful pronunciation, adds, "May I here make a reflection on the education we commonly give our children? It is very remote from the precepts I have mentioned. Hath the child arrived to six or seven years of age, he mixes with a herd of ill-bred boys at school, where, under the pretext of teaching him *Latin*, no regard is had to his *mother tongue*: And what happens? What we see every day. A young gen-

annually during five years. To put the machine in motion, twenty-four of the principal subscribers agreed to take upon themselves the trust; and a set of

---

tleman of eighteen, who has had this education, cannot read. For to articulate the words, and join them together, I do not call *reading*, unless one can pronounce well, observe all the proper stops, vary the voice, express the sentiment, and read with a delicate intelligence. Nor can he speak a jot better. A proof of this is that he cannot write ten lines without committing gross faults; and because he did not learn his own language well in his early years, he will never know it well: I except a few, who being afterwards engaged by their profession, or their natural taste, cultivate their minds by study. And yet even they, if they attempt to write, will find by the *labor* composition costs them, what a *loss it is*, not to have learned their language in the proper season. Education among the *Romans* was upon a quite different footing. Masters of rhetoric taught them early the principles, the difficulties, the beauties, the subtleties, the depths, the riches of their own language. When they went from these schools, they were perfect masters of it, they were never at a loss for proper expressions; and I am much deceived if it was not owing to this, that they produced such excellent works with so *marvellous facility*."

Pliny, in his letter to a lady on choosing a tutor for her son, speaks of it as the most material thing in his education, that he should have a good *Latin* master of rhetoric, and recommends *Julius Genitor* for his *eloquent, open, and plain faculty of speaking*. He does not advise her to a *Greek* master of rhetoric, though the *Greeks* were famous for that science; but to a *Latin* master, because *Latin* was the boy's mother tongue. In the above quotation from Monsieur *Simon*, we see what was the office and duty of the master of rhetoric.

To form their style, they should be put on writing letters to each other, making abstracts of what they read; or writing the same things in their own words; telling or writing stories lately read, in their own expressions. All to be revised and corrected by the tutor, who should give his reasons, explain the force and import of words, &c.

This Mr. *Locke* recommends, *Educ.* p. 284, and says, "The writing of letters has so much to do in all the occurrences of human life, that no gentleman can avoid shewing himself in this kind of writing. Occasions will daily force him to make this use of his pen, which, besides the consequence that, in his affairs, the well or ill managing it often draws after it, always lays him open to a severer examination of his breeding, sense and abilities, than oral discourses, whose transient faults dying for the most part with the sound that gives them life, and so not subject to a strict review, more easily escape observation and censure."

He adds, "Had the methods of education been directed to their right end, one would have thought this so necessary a part could not have been neglected, whilst themes and verses in *Latin*, of no use at all, were so constantly everywhere pressed, to the racking of children's invention beyond their strength, and hindering their cheerful progress by unnatural difficulties. But custom has so ordained it, and who dares disobey? And would it not be very unreasonable to require of a learned country schoolmaster (who has all the tropes and figures in *Farnaby's* rhetoric at his finger's ends) to teach his scholar to express himself handsomely in *English*, when it appears to be so little his business

constitutions for their government, and for the regulation of the schools, were drawn up by Mr. Francis and myself, which were signed by us all and printed,

---

or thought, that the boy's mother (despised, 'tis like, as illiterate for not having read a system of logic or rhetoric) outdoes him in it?

"To speak and write correctly, gives a grace, and gains a favorable attention to what one has to say: And since 'tis *English* that an *Englishman* will have constant use of, that is the language he should chiefly cultivate, and wherein most care should be taken to polish and perfect his style. To speak or write better *Latin* than *English*, may make a man be talked of, but he will find it more to his purpose to express himself well in his own tongue, that he uses every moment, than to have the vain commendations of others for a very insignificant quality. This I find universally neglected, nor no care taken any where to improve young men in their own language, that they may thoroughly understand and be masters of it. If any one among us have a facility or purity more than ordinary in his mother tongue, it is owing to chance, or his genius, or any thing, rather than to his education or any care of his teacher. To mind what *English* his pupil speaks or writes, is below the dignity of one bred up among *Greek* and Latin, though he have but little of them himself. These are the learned languages, fit only for learned men to meddle with and teach: *English* is the language of the illiterate vulgar. Though the great men among the *Romans* were daily exercising themselves in their own language; and we find yet upon the record the names of orators who taught some of their Emperor's *Latin*, though it were their mother tongue. 'Tis plain the Greeks were yet more nice in theirs. All other speech was barbarous to them but their own; and no foreign language appears to have been studied or valued amongst that learned and acute people; though it be past doubt that they borrowed their learning and philosophy from abroad."

To the same purpose writes a person of eminent learning in a letter to Dr. Turnbull: "Nothing certainly (says he) can be of more service to mankind than a right method of educating the youth, and I should be glad to hear ——— to give an example of the great advantage it would be to the *rising age*, and to our nation. When our public schools were first established, the knowledge of *Latin* was thought learning; and he that had had a tolerable skill in two or three languages, though his mind was not enlightened by any *real knowledge*, was a profound scholar. But it is not so at present; and people confess, that men may have obtained a perfection in these, and yet continue *deeply ignorant*. The *Greek* education was of another kind (which he describes in several particulars, and adds), They studied to write their *own tongue* more accurately than we do *Latin* and *Greek*. But where is *English* taught at present? Who thinks it of use to study correctly *that language* which he is to use *every day* in his life, be his station ever so high, or ever so insignificant. It is in *this* the nobility and gentry defend their country, and serve their prince in parliament; in *this* the lawyers plead, the divines instruct, and all ranks of people write their letters, and transact all their affairs; and yet who thinks it worth his learning to write *this* even accurately, not to say politely? Every one is suffered to form his style by chance; to imitate the first wretched model which falls in his way, before he knows what is faulty, or can relish the beauties of a just simplicity. Few think their children qualified for a trade till they have been whipt at a *Latin* school for five or six years, to learn a little of that which they are obliged to forget; when in those years right

that the public might know what was to be expected. I wrote also a paper, intitled, 'Idea of an English School,' which was printed, and afterwards annexed to Mr. Peter's sermon, preached at the opening of the academy. This paper was said to be for the consideration of the trustees; and the expectation of the public that the idea might in a great measure be carried into execution, contributed to render the subscriptions more liberal as well as more general. I mention my concern in these transactions, to show the opportunity I had of being well informed in the points I am relating.

These constitutions are upon record in your minutes; and, although the Latin and Greek is by them to be taught, the original idea of a complete English education was not forgotten, as will appear by the following extracts.

Page 1. "The English tongue is to be taught grammatically, and as a language."

Page 4. In reciting the qualification of the person to be appointed rector, it is said, "that *great regard* is to be had to his *polite speaking, writing, and understanding the English tongue.*"

"The rector was to have two hundred pounds a-year, for which he was to be obliged to teach twenty boys without any assistance, and twenty-five more for every usher provided for him, the Latin and Greek languages; and at the same time instruct them in history, geography, chronology, logic, rhetoric, and *the English tongue.*"

"The rector was also, on all occasions consistent with his duty in the Latin school, to *assist the English master in improving the youth under his care.*"

Page 5. "The trustees shall, with all convenient speed, contract with any person that offers, who they shall judge most capable of *teaching the English tongue grammatically and as a language*, history, geography, chronology, logic, and oratory; which person shall be styled *the English master.*"

---

education would have improved their minds, and taught them to acquire habits of writing *their own language* easily under right direction; and this would have been useful to them as long as they lived." *Introd.* p. 3, 4, 5,

To form their pronunciation, they may be put on making declamations, repeating speeches, delivering orations, &c. The tutor assisting at the rehearsals, teaching, advising, correcting their accent, &c. By pronunciation is here meant, the proper modulation of the voice, to suit the subject with due emphasis, action, &c. In delivering a discourse in public, designed to persuade, the *manner*, perhaps, contributes more to success, than either the *matter* or *method*. Yet the two latter seem to engross the attention of most preachers and other public speakers, and the former to be almost totally neglected.

The English master was to have one hundred pounds a-year, for which he was to teach, without any assistance, forty scholars, *the English tongue grammatically;* and at the same time instruct them in history, geography, chronology, logic, and oratory; and sixty scholars more for every usher provided for him.

It is to be observed in this place, that here are two distinct courses in the same study, that is of the same branches of science, viz. history, geography, chronology, logic, and oratory, to be carried on at the same time, but not by the same tutor or master. The English master is to teach his scholars all those branches of science, and also the English tongue grammatically, as a language. The Latin master is to teach the same sciences to his boys, besides the Greek and Latin. He was also to assist the English master occasionally, without which, and his general care in the government of the schools, the giving him double salary seems not well accounted for. But here is plainly two distinct schools or courses of education provided for. The Latin master was not to teach the English scholars logic, rhetoric, &c. that was the duty of the English master, but he was to teach those sciences to the Latin scholars. We shall see hereafter how easily this original plan was defeated and departed from.

When the constitutions were first drawn, blanks were left for the salaries, and for the number of boys the Latin master was to teach. The first instance of partiality in favor of the Latin part of the institution, was in giving the title of rector to the Latin master, and no title to the English one. But the most striking instance was when we met to sign, and the blanks were first to be filled up, the votes of a majority carried it to give twice as much salary to the Latin master as to the English, and yet require twice as much duty from the English master as from the Latin, viz. 200*l.* to the Latin master to teach twenty boys; 100*l.* to the English master to teach forty! However, the trustees who voted these salaries being themselves by far the greatest subscribers, though not the most numerous, it was thought they had a kind of right to predominate in money matters; and those who had wished an equal regard might have been shown to both schools, submitted, though not without regret, and at times some little complaining, which, with their not being able in nine months to find a proper person for *English master*, who would undertake the office for so low a salary, induced the trustees at length, viz. in July 1750, to offer 50*l.* more.

Another instance of the partiality above-mentioned was in the March preceding, when 100*l.* sterling was voted to buy *Latin* and *Greek* books, maps, drafts, and instruments for the use of the academy, and nothing for the *English books*.

The great part of the subscribers, who had the English education chiefly in view, were however soothed into a submission to these partialities, chiefly by the expectation given them by the constitution, viz. that the trustees would make it their pleasure, and in some degree their business, to visit the academy often, to encourage and countenance the youth, look on the students as in some measure their own children, treat them with familiarity and affection; and when they have behaved well, gone through their studies, and are to enter the world, the trustees shall zealously unite, and make all the interest that can be made, to promote and establish them, whether in business, offices, marriages, or any other thing for their advantage, preferable to all other persons whatsoever, even of equal merit.

These splendid promises dazzled the eyes of the public: the trustees were most of them the principal gentlemen of the province. Children taught in other schools had no reason to expect such powerful patronage. The subscribers had placed such entire confidence in them as to leave themselves no power of changing them if their conduct of the plan should be disapproved; and so, in hopes of the best, all these partialities were submitted to.

Near a year passed before a proper person was found to take charge of the English school. At length Mr. Dove, who had been many years master of a school in England, and had come hither with an apparatus for giving lectures in experimental philosophy, was prevailed with by me, after his lectures were finished, to accept that employment for the salary offered, though he thought it too scanty. He had a good voice, read perfectly well, with proper accent and just pronunciation, and his method of communicating habits of the same kind to his pupils, was this:—When he gave a lesson to one of them, he always first read it to him aloud, with all the different modulations of voice that the subject and sense required. These the scholars, in studying and repeating the lesson, naturally endeavored to imitate, and it was really surprising to see how soon they caught his manner, which convinced me and others who frequently attended his school, that though bad tones and manners in reading are, when once acquired, rarely with difficulty if ever cured, yet when none

have been already formed, good ones are as easily learned as bad. In a few weeks after opening his school, the trustees were invited to hear the scholars read and recite: the parents and relations of the boys also attended. The performances were surprisingly good, and of course were admired and applauded; and the English school thereby acquired such reputation, that the number of Mr. Dove's scholars soon amounted to upwards of ninety, which number did not diminish as long as he continued master, viz. upwards of two years; but he finding the salary insufficient, and having set up a school for girls in his own house to supply the deficiency, and quitting the boy's school somewhat before the hour to attend the girls, the trustees disapproved of his so doing, and he quitted their employment; continued his girl's school, and opened one for boys on his own account. The trustees provided another English master; but though a good man, yet not possessing the talents of an English schoolmaster in the same perfection with Mr. Dove: the school diminished daily, and soon was found to have but about forty scholars left. The performances of the boys, in reading and speaking, were no longer so brilliant; the trustees of course had not the same pleasure in hearing them, and the monthly visitations, which had so long afforded a delightful entertainment to large audiences, became less and less attended, and at length discontinued; and the English school has never since recovered its original reputation.

Thus, by our injudiciously starving the English part of our scheme of education, we only saved fifty pounds a-year, which was required as an additional salary to an acknowledged excellent English master, which would have equalled his encouragement to that of the Latin master; I say, by saving the 50*l.* we lost fifty scholars, which would have been 200*l.* a-year, and defeated, besides, our great end of the institution.

In the mean time our favors were showered upon the Latin part; the number of teachers was increased, and their salaries from time to time augmented, till, if I mistake not, they amounted in the whole to more than 600*l.* a-year, though the scholars hardly ever exceeded sixty; so that each scholar cost the funds 10*l.* per annum, while he paid but 4*l.*, which was a loss of 6*l.* by every one of them.

The monthly visitations of the schools by the trustees having been long neglected, the omission was complained of by the parents as a breach of original

promise; whereupon the trustees, July 11, 1755, made it a law, that "they should meet on the second Tuesday in every month at the academy, to visit the schools, examine the scholars, hear their public exercises, &c." This good law, however, like many others, was not long observed; for I find by a minute of December 14, 1756, that the examination of the schools by the trustees had been long neglected, and it was agreed that it should thereafter be done on the first Monday in every month; and yet, notwithstanding this new rule, the neglect returned, so that we are informed, by another minute of January 13, 1761, "that for five months past there had not been *one* meeting of the trustees." In the course of fourteen years several of the original trustees, who had been disposed to favor the English school, deceased, and others not so favorable were chosen to supply their places; however, it appears by the minutes, that the remainder had sometimes weight enough to recall the attention of their colleagues to that school, and obtain acknowledgments of the unjust neglect it had been treated with; of this the following extracts from the minutes are authentic proofs, viz.—"Minute Book, Vol. I. February 8, 1763.—The state of the English school was taken into consideration, and it was observed that Mr. Kinnersley's time was entirely taken up in teaching little boys the elements of the English language (this is what it dwindled into, a school similar to those kept by old women, who teach children their letters); and that speaking and rehearsing in public were *totally disused*, to the great prejudice of the other scholars and students, and contrary to the *original design* of the trustees in the forming of that school; and, as this was a matter of great importance, it was *particularly recommended* to be *fully considered* by the trustees at their next meeting."—At their next meeting it was not considered; but this minute contains full proof of the fact, that the English education had been neglected, and it contains an acknowledgment that the conduct of the English school was contrary to the original design of the trustees in forming it.

In the same book of minutes we find the following, of April 12, 1763:—"The state of the English school was again taken into consideration, and it was the opinion of the trustees that the ORIGINAL DESIGN should be prosecuted, of teaching the scholars (of that and the other schools) the elegance of the English language, and giving them a proper pronunciation; and that the *old method* of hearing them read and repeat in public, should be again used. And a committee was appointed to confer with Mr. Kinnersley, how this

might best be done, as well as what assistance would be necessary to give Mr. Kinnersley to enable him to attend this *necessary service*, which was indeed the PROPER BUSINESS of his professorship."

In this minute, we have another acknowledgment of what was the *original design* of the English school; but here are some words thrown in to countenance an innovation, which had been for some time practised. The words are, (and the other schools) "originally by the constitutions, the rector was to teach the Latin scholars their English; the words of the constitution are, 'The rector shall be obliged without the assistance of any usher, to teach 20 scholars the Latin and Greek languages, and the English tongue.'" To enable him to do this, we have seen that some of his qualifications indispensably required, were, his *polite speaking*, *writing*, and *understanding the English tongue*. Having these, he was enjoined on all occasions consistent with his other duties, to assist the English master in improving the boys under his care; but there is not a word obliging the English master to teach the Latin boys English. However, the Latin masters, either unable to do it, or unwilling to take the trouble, had got him up among them, and employed so much of his time, that this minute owns he could not, without farther assistance, attend the *necessary service* of his own school, which, as the minute expressly says, "was indeed the *proper business* of his professorship."

Notwithstanding this good resolution of the trustees, it seems the execution of it was neglected, and the public not being satisfied, they were again haunted by the friends of the children with the old complaint, that the original constitutions were not complied with, in regard to the English school. Their situation was unpleasant. On the one hand, there were still remaining some of the first trustees who were friends to the scheme of English education, and these would now and then be remarking that it was neglected, and would be moving for a reformation; the constitutions at the same time staring the trustees in the face, gave weight to these remarks. On the other hand, the Latinists were combined to decry the English school as useless. It was without example, they said, as indeed they still say, that a school for teaching the vulgar tongue, and the sciences in that tongue, was ever joined with a college, and that the Latin masters were fully competent to teach the English. I will not say that the Latinists looked on every expense upon the English school, as so far disabling the trustees from augmenting their salaries, and therefore regarded it with an evil eye; but when I find the minutes constantly filled with their applications

for higher wages, I cannot but see their great regard for money matters, and suspect a little their using their interest and influence to prevail with the trustees not to encourage that school. And indeed the following minute is so different in spirit and sentiment from that last recited, that one cannot avoid concluding that some extraordinary pains must have been taken with the trustees between the two meetings of April 12, and June 13, to produce a resolution so very different, which here follows in this minute, viz. "June 13, 1763. Some of the parents of the children in the academy, having complained that their children were not taught to speak and read in public, and having requested that this useful part of education might be more attended to, Mr. Kinnersley was called in, and desired to give an account of what was done in this branch of his duty; and he declared that this was well taught, not only in the English school, which was more immediately under his care, *but in the philosophy classes regularly every Monday afternoon, and as often at other times as his other business would permit.* And it not appearing to the trustees that any more could at present be done, without partiality and great inconvenience, and that this was all that was ever proposed to be done, they did not incline to make any alteration, or to lay any farther burthen on Mr. Kinnersley." Note here, that the English school had not for some years preceding been visited by the trustees. If it had, they would have known the state of it without making this inquiry of the master. They might have judged, whether the children more immediately under his care, were in truth well taught, without taking his word for it, as it appears they did. But it seems he had a merit, which, when he pleaded it, effectually excused him: he spent his time when out of the English school in instructing the philosophy classes who were of the Latin part of the institution. Therefore they did not think proper to lay any farther burthen upon him.

It is a little difficult to conceive how these trustees could bring themselves to declare, that "No more could be done in the English school than was then done, and that it was *all* that *was ever* proposed to be done;" when their preceding minute declares, that "The *original design* was teaching scholars the elegance of the English language, and giving them a proper pronunciation; and that hearing them read and repeat in public was the *old method*, and should be again used." And certainly, the method that had been used might be again used, if the trustees had thought fit to order Mr. Kinnersley to attend his own school, and not spend his time in the philosophy classes, where his duty did

not require his attendance. What the apprehended partiality was which the minute mentions, does not appear, and cannot easily be imagined, and the great inconvenience of obliging him to attend his own school, could only be depriving the Latinists of his assistance, to which they had no right.

The trustees may possibly have supposed, that by this resolution, they had precluded all future attempts to trouble them with respect to their conduct of the English school. The parents indeed, despairing of any reformation, withdrew their children and placed them in private schools, of which several now appeared in the city, professing to teach what had been promised to be taught in the academy; and they have since florished and increased by the scholars the academy might have had, if it had performed its engagements. But the public was not satisfied; and we find, five years after, the English school appearing again, after five years' silence, haunting the trustees like an evil conscience, and reminding them of their failure in duty. For, of their meetings Jan. 19 and 26, 1768, we find these minutes: "Jan. 19, 1768. It having been remarked, that the schools suffer in the public esteem by the discontinuance of public speaking, a special meeting is to be called on Tuesday next, to consider the state of the English school, and to regulate such matters as may be necessary."—"Jan. 26. A special meeting. It is agreed to give Mr. Jon. Easton and Mr. Thomas Hall, at the rate of twenty-five pounds per annum each, for assisting Mr. Kinnersley in the English school, and taking care of the same when he shall be employed in teaching the students in the *philosophy classes* and *grammar school*, the art of public speaking. A committee, Mr. Peters, Mr. Coxe, and Mr. Duché, with the masters, was appointed to fix rules and times for employing the youth in public speaking. Mr. Easton and Mr. Hall are to be paid out of a fund to be raised by some public performance for the benefit of the college."

It appears from these minutes, 1. That the reputation of the academy had suffered in the public esteem by the trustees' neglect of that school. 2. That Mr. Kinnersley, whose sole business it was to attend it, had been called from his duty and employed in the philosophy classes and Latin grammar school, teaching the scholars there the art of public speaking, which the Latinists used to boast they could teach themselves. 3. That the neglect for so many years of the English scholars by this subtraction of their master, was now acknowledged, and proposed to be remedied for the future by engaging two persons,

Mr. Hall and Mr. Easton, at twenty-five pounds per annum, to take care of those scholars, while Mr. Kinnersley was employed among the Latinists.

Care was however taken by the trustees, not to be at any expense for this assistance to Mr. Kinnersley; for Hall and Easton were only to be paid out of the uncertain fund of money to be raised by some public performance for the benefit of the college.

A committee was however now appointed to fix rules and times for employing the youth in public speaking. Whether any thing was done in consequence of these minutes, does not appear; no report of the committee respecting their doings being to be found on the records, and the probability is that they did as heretofore, nothing to the purpose. For the English school continued to decline, and the first subsequent mention we find made of it, is in the minute of March 21, 1769, when the design began to be entertained of abolishing it altogether, whereby the Latinists would get rid of an eyesore, and the trustees of what occasioned them such frequent trouble. The minute is this: "The state of the English school is to be taken into consideration at next meeting, and whether it be proper to continue it on its present footing or not." This consideration was however not taken at the next meeting, at least nothing was concluded so as to be minuted; nor do we find any farther mention of the English school till the 18th of July, when the following minute was entered; viz. "A special meeting is appointed to be held on Monday next, and notice to be given that the design of this meeting is to consider whether the English school is to be longer continued."

This special meeting was accordingly held on the 23d of July, 1769, of which date is the following minute and resolution: viz. "The trustees at this meeting, as well as several former ones, having taken into their serious consideration the state of the English school, are unanimously of opinion, that as the said school is far from defraying the expense at which they now support it, and not thinking that they ought to lay out any great part of the funds intrusted to them, on this branch of education, which can so easily be procured at other schools in this city, have resolved, that from and after the 17th of October next, Mr. Kinnersley's present salary do cease, and that from that time the said school, if he shall be inclined to keep it, shall be on the following footing; viz. that he shall have the free use of the room where he now teaches, and also the whole tuition-money arising from the boys that may be taught by him, and

that he continue professor of English and oratory, and as such, have the house he lives in *rent-free*, in consideration of his giving two afternoons in the week as heretofore, for the instruction of the students belonging to the college in public speaking; agreeable to such rules as are or shall be made for that purpose by the trustees and faculty. It is further ordered by this regulation, that the boys belonging to his school shall be still considered as part of the youth belonging to the college, and under the same general government of the trustees and faculty; and such of his scholars as may attend the mathematical or any other master having a salary from the college, for any part of their time, shall pay proportionably into the fund of the trustees, to be accounted for by Mr. Kinnersley, and deducted out of the twenty pounds per quarter now paid by the English scholars."

The trustees hope this regulation may be agreeable to Mr. Kinnersley, as it proceeds entirely from the reasons set forth above, and not from any abatement of that esteem which they have always retained for him, during the whole course of his services in college.

Upon this and some of the preceding minutes, may be observed, 1. That the English school having been long neglected, the scholars were so diminished in number as to be far from defraying the expense in supporting it. 2. That the instruction they received there, instead of a complete English education, which had been promised to the subscribers by the original constitutions, were only such as might easily be procured at other schools in this city. 3. That this unprofitableness of the English school, owing to neglect of duty in the trustees, was now offered as a reason for demolishing it altogether. For it was easy to see, that after depriving the master of his salary, he could not long afford to continue it. 4. That if the insufficiency of the tuition-money in the English school to pay the expense, and the ease with which the scholars might obtain equal instruction in other schools, were good reasons for depriving the master of his salary and destroying that school, they were equally good for dismissing the Latin masters, and sending their scholars to other schools, since it is notorious that the tuition-money of the Latin school did not pay much above a fourth part of the salaries of the masters. For such reasons the trustees might equally well have got rid of all the scholars and all the masters, and remained in full possession of all the college property, without any future expense. 5. That by their refusing any longer to support, instead of reforming, as they ought to have done, the English school, they shamefully broke through

and set at nought the original constitutions, for the due execution of which the faith of the original trustees had been solemnly pledged to the public, and diverted the revenues proceeding from much of the first subscriptions, to other purposes than those which had been promised. Had the assembly, when disposed to disfranchise the trustees, set their foot upon this ground, their proceeding to declare the forfeiture would have been more justifiable; and it may be hoped care will now be taken not to give any future assembly the same handle.

It seems, however, that this unrighteous resolve did not pass the trustees without a qualm in some of them. For at the next meeting a reconsideration was moved, and we find the following minute under the date of Aug. 1, 1769: "The minute of last meeting relative to the English school was read, and after mature deliberation and reconsidering the same, it was voted to stand as it is, provided it should not be found any way repugnant to the first charter granted to the academy, a copy of which was ordered to be procured out of the rolls' office."

One might have thought it natural for the trustees to have consulted this charter before they took the resolution, and not only the first charter, but the original constitutions; but as it seems they had lost the instrument containing the charter, and though it had been printed, not one of them was furnished with a copy to which he might refer, it is no wonder that they had forgot the constitutions made 20 years before, to which they do not seem to have in the least adverted.

Probably, however, the trustees found when they came to examine original papers, that they could not easily get entirely rid of the English school, and so concluded to continue it. For I find in a law for premiums, minuted under the date of Jan. 29, 1770, that the English and mathematical school is directed to be examined the third Tuesday in July, and a premium book of the value of one dollar was to be given to him that reads best, and understands best the English grammar, &c. This is very well; but to keep up the old partiality in favor of the Latin school, the premium to its boys was to be of the value of two dollars. In the premiums for best speaking, they were indeed put upon an equality.

After reading this law for premiums, I looked forward to the third Tuesday in July with some pleasing expectation of their effect on the examination required for that day. But I met with only this further record of the inattention

of the trustees to their new resolutions and even laws, when they contained any thing favorable to the English school. The minute is only this: "July, August, September, October, no business done."

On the 20th of November, however, I find there was an examination of the Latin school and premiums, with pompous inscriptions afterwards adjudged to Latin scholars; but I find no mention of any to the English, or that they were even examined. Perhaps there might have been none to examine, or the school discontinued; for it appears by a minute of July 21, following, that the provost was desired to advertise for a master able to teach English grammatically, which it seems was all the English master was now required to teach, the other branches originally premised being dropt entirely.

In October, 1772, Mr. Kinnersley resigned his professorship, when Dr. Peters and others were appointed to consider in what footing the English school shall be put for the future, that a new master may be thought of, and Mr. Willing to take care of the school for the present at fifty pounds per annum. It is observable here that there is no mention of putting it on its original footing, and the salary is shrunk amazingly; but this resignation of Mr. Kinnersley gave occasion to one testimony of the utility of the English professor to the institution, notwithstanding all the partiality, neglect, slights, discouragements, and injustice that school had suffered. We find it in the minutes of a special meeting on the 2d of February, 1773, present Dr. Peters, Mr. Chew, Mr. Lawrence, Mr. Willing, Mr. Trettel, and Mr. Inglis, and expressed in these strong terms.

"The college suffers *greatly* since Mr. Kennersley left it, for want of a person to teach public speaking, so that the present classes have not those opportunities of learning to declaim and speak which have been of so much *use* to their predecessors, and have contributed *greatly* to *raise the credit* of the institution."

Here is another confession that the Latinists were unequal to the task of teaching English eloquence, though on occasion the contrary is still asserted. I flatter myself, Gentlemen, that it appears by this time pretty clearly from our own minutes, that the original plan of the English school has been departed from; that the subscribers to it have been disappointed and deceived, and the faith of the trustees not kept with them; that the public have been frequently dissatisfied with the conduct of the trustees, and complained of it; that by the niggardly treatment of good masters, they have been driven out of the school, and the scholars have followed, while a great loss of revenue has been suffered by the

academy; so that the numerous schools now in the city owe their rise to our mismanagement, and that we might as well have had the best part of the tuition-money paid into our treasury that now goes into private pockets. That there has been a constant disposition to depress the English school in favor of the Latin; and that every means to procure a more equitable treatment has been rendered ineffectual; so that no more hope remains while they continue to have any connexion. It is, therefore, that wishing as much good to the Latinists as their system can honestly procure for them, we now demand a separation, and without desiring to injure them; but claiming an equitable partition of our joint stock, we wish to execute the plan they have so long defeated, and afford the public the means of a complete English education.

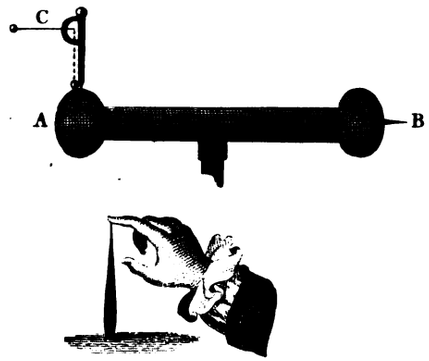
I am the only one of the original trustees now living, and I am just stepping into the grave myself. I am afraid that some part of the blame incurred by the trustees may be laid on me for having too easily submitted to the deviations from the constitution, and not opposing them with sufficient zeal and earnestness; though indeed my absence in foreign countries at different times for near 30 years, tended much to weaken my influence: to make what amends are yet in my power, I seize this opportunity, the last I may possibly have, of bearing testimony against those deviations. I seem here to be surrounded by the ghosts of my dear departed friends, beckoning and urging me to use the only tongue now left us in demanding that justice to our grand-children that to our children have been denied. And I hope they will not be sent away discontented.

The origin of Latin and Greek schools among the different nations of Europe is known to have been this, that until between 3 and 400 years past there were no books in any other language; all the knowledge then contained in books, viz. the theology, the jurisprudence, the physic, the art-military, the politics, the mathematics and mechanics, the natural and moral philosophy, the logic and rhetoric, the chemistry, the pharmacy, the architecture, and every other branch of science, being in those languages, it was of course necessary to learn them, as the gates through which men must pass to get at that knowledge.

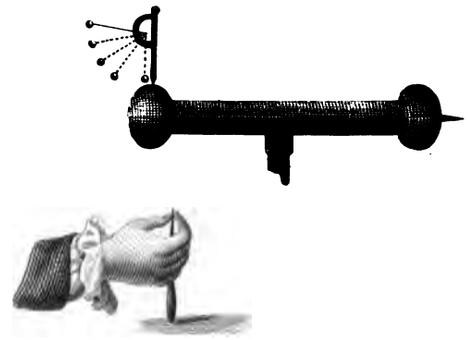
The books then existing were manuscript, and these consequently so dear, that only the few wealthy inclined to learning could afford to purchase them. The common people were not even at the pains of learning to read, because, after taking that pains, they would have nothing to read that they could understand without learning the ancients' languages, nor then, without money to purchase the manuscripts. And so few were the learned readers 60 years after the

Plate II . *to face Page 308.*

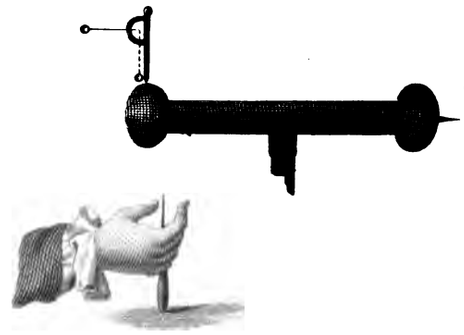
Exp. I.



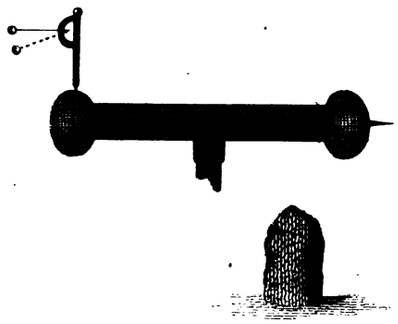
Exp. II.



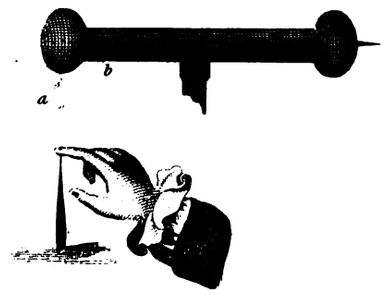
Exp. III.



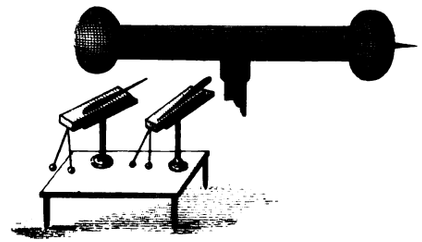
Exp. IV.



Exp. V.



Exp. VI.



London. Published by Henry Colburn, Conduit Street. May 1818.

invention of printing, that it appears by letters still extant between the printers in 1499, that they could not throughout Europe find purchasers for more than 300 copies of any ancient authors. But printing beginning now to make books cheap, the readers increased so much as to make it worth while to write and print books in the vulgar tongues. At first these were chiefly books of devotion and little histories; gradually several branches of science began to appear in the common languages, and at this day the whole body of science, consisting not only of translations from all the valuable ancients, but of all the new modern discoveries, is to be met with in those languages, so that learning the ancient for the purpose of acquiring knowledge is become absolutely unnecessary.

But there is in mankind an unaccountable prejudice in favor of ancient customs and habitudes, which inclines to a continuance of them after the circumstances which formerly made them useful cease to exist. A multitude of instances might be given, but it may suffice to mention one. Hats were once thought an useful part of dress; they kept the head warm and screened it from the violent impression of the sun's rays, and from the rain, snow, hail, &c. Though, by the way, this was not the more ancient opinion or practice; for among all the remains of antiquity, the bustos, statues, basso-relievos, medals, &c. which are infinite, there is no representation of a human figure with a cap or hat on, nor any covering for the head, unless it be the head of a soldier, who has a helmet, but that is evidently not a part of dress for health, but as a protection from the strokes of a weapon.

At what time hats were first introduced we know not, but in the last century they were universally worn throughout Europe. Gradually, however, as the wearing of wigs, and hair nicely dressed prevailed, the putting on of hats was disused by genteel people, lest the curious arrangements of the curls and powdering should be disordered; and umbrellas began to supply their place; yet still our considering the hat as a part of dress continues so far to prevail, that a man of fashion is not thought dressed, without having one, or something like one, about him, which he carries under his arm. So that there are a multitude of the politer people in all the courts and capital cities of Europe, who have never, nor their fathers before them, worn a hat otherwise than as a *chapeau bras*, though the utility of such a mode of wearing it is by no means apparent, and it is attended not only with some expense but with a degree of constant trouble.

The still prevailing custom of having schools for teaching generally our children in these days the Latin and Greek languages, I consider therefore in no other light than as the *chapeau bras* of modern literature.

Thus the time spent in that study might, it seems, be much better employed in the education for such a country as ours; and this was indeed the opinion of most of the original trustees. B. FRANKLIN.

HINTS

FOR CONSIDERATION RESPECTING THE ORPHAN SCHOOL-HOUSE IN PHILADELPHIA.

CHARITABLE institutions, however originally well intended, and well executed at first for many years, are subject to be in a course of time corrupted, mismanaged, their funds misapplied or perverted to private purposes. Would it not be well to guard against these by prudent regulations respecting the choice of managers, and establishing the power of inspecting their conduct in some permanent body, as the monthly or quarterly meeting?

Would it not be more respectable for the institution, if the appearance of making a profit of the labor of orphans were avoided, and the dependance for funds to be wholly on charitable contributions? If this should be concluded, then it may be proper to open an account with each orphan on admission; the orphans to have credit for any subsistence brought in with them, and for the profit made of it and of their labor, and made debtors for their maintenance and education. And at their discharge on coming of age, to be paid the balance, if any, in their favor, or remain debtors for the balance, if against them, which they may be exhorted to pay, if ever able, but not to be compelled. Such as receive a balance may be exhorted to give back a part in charity to the institution that has taken such kind care of them, or at least to remember it favorably if hereafter God should bless them with ability, either in benefaction while living, or a legacy on decease. The orphans when discharged to receive, besides decent clothing and some money, a certificate of their good behavior, if such it has been, as a recommendation; and the managers of the institution should still consider them as their children, so far as to counsel them in their affairs, encourage and promote them in their business, watch over and kindly admonish them when in danger of misconduct. B. F.

For the Federal Gazette, 12th September, 1789.

AN ACCOUNT

OF THE SUPREMEST COURT OF JUDICATURE IN PENNSYLVANIA, VIZ.

THE COURT OF THE PRESS.

Power of this Court.

It may receive and promulgate accusations of all kinds, against all persons and characters among the citizens of the state, and even against all inferior courts; and may judge, sentence, and condemn to infamy, not only private individuals, but public bodies, &c. with or without inquiry or hearing, *at the court's discretion.*

In whose favor and for whose emolument this Court is established.

In favor of about one citizen in five hundred, who, by education or practice in scribbling, has acquired a tolerable style as to grammar and construction, so as to bear printing; or who is possessed of a press and a few types. This five hundredth part of the citizens have the privilege of accusing and abusing the other four hundred and ninety-nine parts at their pleasure; or they may hire out their pens and press to others for that purpose.

Practice of the Court.

It is not governed by any of the rules of common courts of law. The accused is allowed no grand jury to judge of the truth of the accusation before it is publicly made, nor is the name of the accuser made known to him, nor has he an opportunity of confronting the witnesses against him; for they are kept in the dark, as in the Spanish court of inquisition. Nor is there any petty jury of his peers sworn to try the truth of the charges. The proceedings are also sometimes so rapid, that an honest good citizen may find himself suddenly and unexpectedly accused, and in the same morning judged and condemned, and sentence pronounced against him, that he is a *rogue* and a *villain.* Yet, if an officer of this court receives the slightest check for misconduct in this his office, he claims immediately the rights of a free citizen by the constitution, and demands to know his accuser, to confront the witnesses, and to have a fair trial by a jury of his peers.

The foundation of its authority.

It is said to be founded on an article in the state constitution, which establishes *the liberty of the press:* a liberty which every Pennsylvanian will fight and die for; though few of us, I believe, have distinct ideas of its nature and extent. It seems indeed somewhat like the *liberty of the press* that felons have, by the common law of England, before conviction, that is, to be *pressed* to death or hanged. If by the *liberty of the press* were understood merely the liberty of discussing the propriety of public measures and political opinions, let us have as much of it as you please; but if it means the liberty of affronting, calumniating, and defaming one another, I, for my part, own myself willing to part with my share of it whenever our legislators shall please so to alter the law, and shall cheerfully consent to exchange my *liberty* of abusing others for the *privilege* of not being abused myself.

By whom this Court is commissioned or constituted.

It is not by any commission from the supreme executive council, who might previously judge of the abilities, integrity, knowledge, &c. of the persons to be appointed to this great trust, of deciding upon the characters and good fame of the citizens; for this court is above that council, and may *accuse, judge,* and *condemn* it, at pleasure. Nor is it hereditary, as in the court of *dernier resort,* in the peerage of England. But any man who can procure pen, ink, and paper, with a press, a few types, and a huge pair of BLACKING balls, may commissionate himself; and his court is immediately established in the plenary possession and exercise of its rights. For if you make the least complaint of the *judge's* conduct, he daubs his blacking balls in your face wherever he meets you; and besides tearing your private character to flitters, marks you out for the odium of the public, as an *enemy to the liberty of the press.*

Of the natural support of these courts.

Their support is founded in the depravity of such minds as have not been mended by religion, nor improved by good education:

"There is a lust in man no charm can tame,
Of loudly publishing his neighbor's shame."

Hence:

"On eagle's wings immortal scandals fly,
While virtuous actions are but born and die." DRYDEN.

Whoever feels pain in hearing a good character of his neighbor, will feel a pleasure in the reverse. And of those who, despairing to rise into distinction by their virtues, and are happy if others can be depressed to a level with themselves, there are a number sufficient in every great town to maintain one of these courts by their subscriptions. A shrewd observer once said, that in walking the streets in a slippery morning, one might see where the good-natured people lived by the ashes thrown on the ice before their doors: probably he would have formed a different conjecture of the temper of those whom he might find engaged in such a subscription.

Of the checks proper to be established against the abuse of power in those courts.

Hitherto there are none. But since so much has been written and published on the federal constitution, and the necessity of checks in all other parts of good government has been so clearly and learnedly explained, I find myself so far enlightened as to suspect some check may be proper in this part also; but I have been at a loss to imagine any that may not be construed an infringement of the sacred *liberty of the press.* At length, however, I think I have found one that, instead of diminishing general liberty, shall augment it; which is, by restoring to the people a species of liberty of which they have been deprived by our laws, I mean the *liberty of the cudgel.* In the rude state of society prior to the existence of laws, if one man gave another ill language, the affronted person would return it by a box on the ear; and if repeated, by a good drubbing; and this without offending against any law: but now the right of making such returns is denied, and they are punished as breaches of the peace; while the right of abusing seems to remain in full force: the laws made against it being rendered ineffectual by the *liberty of the press.*

My proposal then is, to leave the liberty of the press untouched, to be exercised in its full extent, force, and vigor; but to permit the *liberty of the cudgel* to go with it *pari passu.* Thus, my fellow-citizens, if an impudent writer attacks your reputation, dearer to you perhaps than your life, and puts his name to the charge, you may go to him as openly and break his head. If he conceals himself behind the printer, and you can nevertheless discover who he is, you may in like manner way-lay him in the night, attack him behind, and give him a good drubbing. Thus far goes my project as to *private* resentment and retribution. But if the public should ever happen to be affronted, *as it ought to be,* with the conduct of such writers, I would not advise proceeding immediately to these

extremities; but that we should in moderation content ourselves with tarring and feathering, and tossing them in a blanket.

If, however, it should be thought that this proposal of mine may disturb the public peace, I would then humbly recommend to our legislators to take up the consideration of both liberties, that of the *press*, and that of the *cudgel*, and by an explicit law mark their extent and limits; and at the same time that they secure the person of a citizen from *assaults*, they would likewise provide for the security of his *reputation*.

SECTION III.

BAGATELLES.

[*The Letters, Essays, &c. contained in this section, were chiefly written by Dr. Franklin for the amusement of his intimate society in London and Paris; and were by himself actually collected in a small port-folio, endorsed as above. Several of the pieces were either originally written in French, or afterwards translated by him into that language, by way of exercises.*]

THE LEVÉE.

In the first chapter of Job we have an account of a transaction said to have arisen in the court, or at the *levée*, of the best of all possible princes, or of governments by a single person, viz. that of God himself.

At this *levée*, in which the sons of God were assembled, Satan also appeared.

It is probable the writer of that ancient book took his idea of this *levée* from those of the eastern monarchs of the age he lived in.

It is to this day usual at the *levées* of princes, to have persons assembled who are enemies to each other, who seek to obtain favor by whispering calumny and detraction, and thereby ruining those that distinguish themselves by their virtue and merit. And kings frequently ask a familiar question or two, of every one in the circle, merely to show their benignity. These circumstances are particularly exemplified in this relation.

If a modern king, for instance, finds a person in the circle who has not lately been there, he naturally asks him how he has passed his time since he last had the pleasure of seeing him? the gentleman perhaps replies that he has been in the country to view his estates, and visit some friends. Thus Satan being asked whence he cometh? answers, "From going to and fro in the earth, and walking up and down in it." And being further asked, whether he had considered the uprightness and fidelity of the prince's servant Job, he immediately displays all the malignance of the designing courtier, by answering with another

question: "Doth Job serve God for nought? Hast thou not given him immense wealth, and protected him in the possession of it? Deprive him of that, and he will curse thee to thy face." In modern phrase, Take away his places and his pensions, and your Majesty will soon find him in the opposition.

This whisper against Job had its effect. He was delivered into the power of his adversary, who deprived him of his fortune, destroyed his family, and completely ruined him.

The book of Job is called by divines a sacred poem, and with the rest of the Holy Scriptures, is understood to be written for our instruction.

What then is the instruction to be gathered from this supposed transaction?

Trust not a single person with the government of your state. For if the Deity himself, being the monarch, may for a time give way to calumny, and suffer it to operate the destruction of the best of subjects; what mischief may you not expect from such power in a mere man, though the best of men, from whom the truth is often industriously hidden, and to whom falsehood is often presented in its place, by artful, interested, and malicious courtiers?

And be cautious in trusting him even with limited powers, lest sooner or later he sap and destroy those limits, and render himself absolute.

For by the disposal of places, he attaches to himself all the placeholders, with their numerous connexions, and also all the expecters and hopers of places, which will form a strong party in promoting his views. By various political engagements for the interest of neighboring states or princes, he procures their aid in establishing his own personal power. So that, through the hopes of emolument in one part of his subjects, and the fear of his resentment in the other, all opposition falls before him.

PROPOSED NEW VERSION OF THE BIBLE.

To the Printer of * * * *.

Sir,

It is now more than 170 years since the translation of our common English Bible. The language in that time is much changed, and the stile being obsolete, and thence less agreeable, is perhaps one reason why the reading of that excellent book is of late so much neglected. I have therefore thought it would be well to procure a new version, in which, preserving the sense, the turn of phrase and manner of expression should be modern. I do

not pretend to have the necessary abilities for such a work myself; I throw out the hint for the consideration of the learned: and only venture to send you a few verses of the first chapter of Job, which may serve as a sample of the kind of version I would recommend. A. B.

PART OF THE FIRST CHAPTER OF JOB MODERNISED.

OLD TEXT.	NEW VERSION.
Verse 6 Now there was a day when the sons of God came to present themselves before the Lord, and Satan came also among them.	Verse 6 And it being *levée* day in heaven, all God's nobility came to court, to present themselves before him; and Satan also appeared in the circle, as one of the ministry.
7 And the Lord said unto Satan, Whence comest thou? Then Satan answered the Lord, and said, From going to and fro in the earth, and from walking up and down in it.	7 And God said to Satan, You have been some time absent; where was you? And Satan answered, I have been at my country-seat, and in different places visiting my friends.
8 And the Lord said unto Satan, Hast thou considered my servant Job, that there is none like him in the earth, a perfect and an upright man, one that feareth God, and escheweth evil?	8 And God said, Well, what think you of Lord Job? You see he is my best friend, a perfectly honest man, full of respect for me, and avoiding every thing that might offend me.
9 Then Satan answered the Lord, and said, Doth Job fear God for nought?	9 And Satan answered, Does your Majesty imagine that his good conduct is the effect of mere personal attachment and affection?
10 Hast thou not made an hedge about his house, and about all that he hath on every side? Thou hast blessed the work of his hands, and his substance is increased in the land:	10 Have you not protected him, and heaped your benefits upon him, till he is grown enormously rich?
11 But put forth thine hand now, and touch all that he hath, and he will curse thee to thy face.	11 Try him;—only withdraw your favor, turn him out of his places, and with-hold his pensions; and you will soon find him in the opposition.

APOLOGUE.[1]

LYON, king of a certain forest, had among his subjects a body of faithful dogs, in principle and affection strongly attached to his person and government, but through whose assistance he had extended his dominions, and had become the terror of his enemies.

[1] Written at the period of, and in allusion to, the claims of the *American Royalists* on the *British Government*.

Lyon, however, influenced by evil counsellors, took an aversion to the dogs, condemned them unheard, and ordered his tygers, leopards, and panthers to attack and destroy them.

The dogs petitioned humbly, but their petitions were rejected haughtily; and they were forced to defend themselves, which they did with bravery.

A few among them, of a mongrel race, derived from a mixture with wolves and foxes, corrupted by royal promises of great rewards, deserted the honest dogs and joined their enemies.

The dogs were finally victorious: a treaty of peace was made, in which Lyon acknowledged them to be free, and disclaimed all future authority over them.

The mongrels not being permitted to return among them, claimed of the royalists the reward that had been promised.

A council of the beasts was held to consider their demand.

The wolves and the foxes agreed unanimously that the demand was just, that royal promises ought to be kept, and that every loyal subject should contribute freely to enable his majesty to fulfil them.

The horse alone, with a boldness and freedom that became the nobleness of his nature, delivered a contrary opinion.

"The king," said he, "has been misled, by bad ministers, to war unjustly upon his faithful subjects. Royal promises, when made to encourage us to act for the public good, should indeed be honorably acquitted; but, if to encourage us to betray and destroy each other, they are wicked and void from the beginning. The advisers of such promises, and those who murdered in consequence of them, instead of being recompensed should be severely punished. Consider how greatly our common strength is already diminished by our loss of the dogs. If you enable the king to reward those fratricides, you will establish a precedent that may justify a future tyrant in making like promises, and every example of such an unnatural brute rewarded, will give them additional weight. Horses and bulls, as well as dogs, may thus be divided against their own kind, and civil wars produced at pleasure, till we are so weakened that neither liberty nor safety are any longer to be found in the forest, and nothing remains but abject submission to the will of a despot, who may devour us as he pleases."

The council had sense enough to resolve,—That the demand be rejected.

TO MISS GEORGIANA SHIPLEY,[1]

ON THE LOSS OF HER AMERICAN SQUIRREL, WHO, ESCAPING FROM HIS CAGE, WAS KILLED BY A SHEPHERD'S DOG.

DEAR MISS, *London, Sept.* 26, 1772.

I LAMENT with you most sincerely, the unfortunate end of poor MUNGO. Few squirrels were better accomplished; for he had had a good education, had travelled far, and seen much of the world. As he had the honor of being, for his virtues, your favorite, he should not go, like common skuggs, without an elegy or an epitaph. Let us give him one in the monumental style and measure, which, being neither prose nor verse, is perhaps the properest for grief; since to use common language, would look as if we were not affected, and to make rhimes would seem trifling in sorrow.

EPITAPH.

Alas! poor MUNGO!
Happy wert thou hadst thou known
Thy own felicity.
Remote from the fierce bal'd eagle,
Tyrant of thy native woods;
Thou hadst nought to fear from his piercing talons,
Nor from the murdering gun
Of the thoughtless sportsman.
Safe in thy wir'd castle,
GRIMALKIN never could annoy thee.
Daily wert thou fed with the choicest viands,
By the fair hand of an indulgent mistress;
But, discontented,
Thou wouldst have more freedom:
Too soon, alas! didst thou obtain it;
And, wandering,
Thou art fallen by the fangs of wanton, cruel RANGER!
Learn hence,
Ye who blindly seek more liberty,
Whether subjects, sons, squirrels, or daughters,
That apparent restraint may be real protection;
Yielding peace and plenty,
With security.

---

[1] A daughter of the Bishop of St. Asaph.

You see, my dear Miss, how much more decent and proper this broken style is, than if we were to say, by way of epitaph,—

Here Skugg
Lies snug,
As a bug
In a rug.

and yet, perhaps, there are people in the world of so little feeling as to think that this would be a good-enough epitaph for poor Mungo.

If you wish it, I shall procure another to succeed him; but perhaps you will now choose some other amusement.

Remember me affectionately to all the good family, and believe me ever,

Your affectionate friend, B. FRANKLIN.

THE ART OF PROCURING PLEASANT DREAMS.

INSCRIBED TO MISS ****.

(Being written at her request.)

As a great part of our life is spent in sleep, during which we have sometimes pleasing, and sometimes painful dreams, it becomes of some consequence to obtain the one kind, and avoid the other; for, whether real or imaginary, pain is pain, and pleasure is pleasure. If we can sleep without dreaming, it is well that painful dreams are avoided. If, while we sleep, we can have any pleasing dreams, it is, as the French say, *autant de gagné*, so much added to the pleasure of life.

To this end it is, in the first place, necessary to be careful in preserving health, by due exercise and great temperance; for, in sickness, the imagination is disturbed; and disagreeable, sometimes terrible, ideas are apt to present themselves. Exercise should precede meals, not immediately follow them; the first promotes, the latter, unless moderate, obstructs digestion. If, after exercise, we feed sparingly, the digestion will be easy and good, the body lightsome, the temper cheerful, and all the animal functions performed agreeably. Sleep, when it follows, will be natural and undisturbed; while indolence, with full feeding, occasions night-mares and horrors inexpressible: we fall from precipices, are assaulted by wild beasts, murderers, and demons, and experience every variety of distress. Observe, however, that the quantities of food and

exercise are relative things: those who move much may, and indeed ought, to eat more; those who use little exercise, should eat little. In general, mankind, since the improvement of cookery, eat about twice as much as nature requires. Suppers are not bad, if we have not dined; but restless nights naturally follow hearty suppers after full dinners. Indeed, as there is a difference in constitutions, some rest well after these meals; it costs them only a frightful dream and an apoplexy, after which they sleep till doomsday. Nothing is more common in the newspapers, than instances of people who, after eating a hearty supper, are found dead a-bed in the morning.

Another means of preserving health, to be attended to, is the having a constant supply of fresh air in your bed-chamber. It has been a great mistake, the sleeping in rooms exactly closed, and in beds surrounded by curtains. No outward air that may come into you is so unwholesome as the unchanged air, often breathed, of a close chamber. As boiling water does not grow hotter by longer boiling, if the particles that receive greater heat can escape; so living bodies do not putrefy if the particles, so fast as they become putrid, can be thrown off. Nature expels them by the pores of the skin and the lungs, and in a free open air they are carried off; but in a close room we receive them again and again, though they become more and more corrupt. A number of persons crowded into a small room thus spoil the air in a few minutes, and even render it mortal, as in the Black Hole at Calcutta. A single person is said to spoil only a gallon of air per minute, and therefore requires a longer time to spoil a chamber full; but it is done, however, in proportion, and many putrid disorders hence have their origin. It is recorded of Methusalem, who, being the longest liver, may be supposed to have best preserved his health, that he slept always in the open air; for, when he had lived five hundred years, an angel said to him:—"Arise, Methusalem, and build thee an house, for thou shalt live yet five hundred years longer." But Methusalem answered and said, "If I am to live but five hundred years longer, it is not worth while to build me an house; I will sleep in the air, as I have been used to do." Physicians, after having for ages contended that the sick should not be indulged with fresh air, have at length discovered that it may do them good. It is therefore to be hoped, that they may in time discover likewise, that it is not hurtful to those who are in health, and that we may be then cured of the *aërophobia* that at present distresses weak minds, and makes

them choose to be stifled and poisoned, rather than leave open the window of a bed-chamber, or put down the glass of a coach.

Confined air, when saturated with perspirable matter,[1] will not receive more; and that matter must remain in our bodies, and occasion diseases: but it gives some previous notice of its being about to be hurtful, by producing certain uneasinesses, slight indeed at first, such as with regard to the lungs is a trifling sensation, and to the pores of the skin a kind of restlessness, which is difficult to describe, and few that feel it know the cause of it. But we may recollect, that sometimes on waking in the night, we have, if warmly covered, found it difficult to get asleep again. We turn often without finding repose in any position. This fidgettiness (to use a vulgar expression for want of a better) is occasioned wholly by an uneasiness in the skin, owing to the retention of the perspirable matter—the bed-clothes having received their quantity, and, being saturated, refusing to take any more. To become sensible of this by an experiment, let a person keep his position in the bed, but throw off the bed-clothes, and suffer fresh air to approach the part uncovered of his body; he will then feel that part suddenly refreshed; for the air will immediately relieve the skin, by receiving, licking up, and carrying off, the load of perspirable matter that incommoded it. For every portion of cool air that approaches the warm skin, in receiving its part of that vapor, receives therewith a degree of heat that rarefies and renders it lighter, when it will be pushed away with its burthen, by cooler and therefore heavier fresh air, which for a moment supplies its place, and then, being likewise changed and warmed, gives way to a succeeding quantity. This is the order of nature, to prevent animals being infected by their own perspiration. He will now be sensible of the difference between the part exposed to the air and that which, remaining sunk in the bed, denies the air access: for this part now manifests its uneasiness more distinctly by the comparison, and the seat of the uneasiness is more plainly perceived than when the whole surface of the body was affected by it.

Here, then, is one great and general cause of unpleasing dreams. For when the body is uneasy, the mind will be disturbed by it, and disagreeable ideas of various kinds will in sleep be the natural consequences. The remedies, preventive and curative, follow:

[1] What physicians call the perspirable matter, is that vapor which passes off from our bodies, from the lungs, and through the pores of the skin. The quantity of this is said to be five-eighths of what we eat.

1. By eating moderately (as before advised for health's sake) less perspirable matter is produced in a given time; hence the bed-clothes receive it longer before they are saturated, and we may therefore sleep longer before we are made uneasy by their refusing to receive any more.

2. By using thinner and more porous bed-clothes, which will suffer the perspirable matter more easily to pass through them, we are less incommoded, such being longer tolerable.

3. When you are awakened by this uneasiness, and find you cannot easily sleep again, get out of bed, beat up and turn your pillow, shake the bed-clothes well, with at least twenty shakes, then throw the bed open and leave it to cool; in the mean while, continuing undrest, walk about your chamber till your skin has had time to discharge its load, which it will do sooner as the air may be dried and colder. When you begin to feel the cold air unpleasant, then return to your bed, and you will soon fall asleep, and your sleep will be sweet and pleasant. All the scenes presented to your fancy will be too of the pleasing kind. I am often as agreeably entertained with them as by the scenery of an opera. If you happen to be too indolent to get out of bed, you may, instead of it, lift up your bed-clothes with one arm and leg, so as to draw in a good deal of fresh air, and by letting them fall force it out again. This, repeated twenty times, will so clear them of the perspirable matter they have imbibed, as to permit your sleeping well for some time afterwards. But this latter method is not equal to the former.

Those who do not love trouble, and can afford to have two beds, will find great luxury in rising, when they wake in a hot bed, and going into the cool one. Such shifting of beds would also be of great service to persons ill of a fever, as it refreshes and frequently procures sleep. A very large bed, that will admit a removal so distant from the first situation as to be cool and sweet, may in a degree answer the same end.

One or two observations more will conclude this little piece. Care must be taken when you lie down, to dispose your pillow so as to suit your manner of placing your head, and to be perfectly easy; then place your limbs so as not to bear inconveniently hard upon one another, as, for instance, the joints of your ancles: for though a bad position may at first give but little pain and be hardly noticed, yet a continuance will render it less tolerable, and the uneasiness may come on while your are asleep, and disturb your imagination. These are the rules of the art. But though they will generally prove effectual in pro-

ducing the end intended, there is a case in which the most punctual observance of them will be totally fruitless. I need not mention the case to you, my dear friend, but my account of the art would be imperfect without it. The case is, when the person who desires to have pleasant dreams has not taken care to preserve, what is necessary above all things, A GOOD CONSCIENCE.

THE EPHEMERA,

AN EMBLEM OF HUMAN LIFE (WRITTEN IN 1778.)

To MADAME BRILLON, *of Passy.*

YOU may remember, my dear friend, that when we lately spent that happy day in the delightful garden and sweet society of the Moulin Joly, I stopt a little in one of our walks, and staid some time behind the company. We had been shown numberless skeletons of a kind of little fly, called an ephemera, whose successive generations, we were told, were bred and expired within the day. I happened to see a living company of them on a leaf, who appeared to be engaged in conversation. You know I understand all the inferior animal tongues: my too great application to the study of them is the best excuse I can give for the little progress I have made in your charming language. I listened through curiosity to the discourse of these little creatures; but as they, in their national vivacity, spoke three or four together, I could make but little of their conversation. I found, however, by some broken expressions that I heard now and then, they were disputing warmly on the merit of two foreign musicians, one a *cousin*, the other a *moscheto;* in which dispute they spent their time, seemingly as regardless of the shortness of life as if they had been sure of living a month. Happy people! thought I, you live certainly under a wise, just, and mild government, since you have no public grievances to complain of, nor any subject of contention but the perfections and imperfections of foreign music. I turned my head from them to an old grey-headed one who was single on another leaf, and talking to himself. Being amused with his soliloquy, I put it down in writing, in hopes it will likewise amuse her to whom I am so much indebted for the most pleasing of all amusements, her delicious company and heavenly harmony.

"It was," said he, "the opinion of learned philosophers of our race, who lived and florished long before my time, that this vast world, the Moulin Joly,

could not itself subsist more than eighteen hours; and I think there was some foundation for that opinion, since, by the apparent motion of the great luminary that gives life to all nature, and which in my time has evidently declined considerably towards the ocean at the end of our earth, it must then finish its course, be extinguished in the waters that surround us, and leave the world in cold and darkness, necessarily producing universal death and destruction. I have lived seven of those hours, a great age, being no less than four hundred and twenty minutes of time. How very few of us continue so long! I have seen generations born, florish, and expire. My present friends are the children and grand-children of the friends of my youth, who are now, alas, no more! And I must soon follow them; for, by the course of nature, though still in health, I cannot expect to live above seven or eight minutes longer. What now avails all my toil and labor, in amassing honey-dew on this leaf, which I cannot live to enjoy! What the political struggles I have been engaged in, for the good of my compatriot inhabitants of this bush, or my philosophical studies for the benefit of our race in general! for in politics what can laws do without morals? Our present race of ephemeræ will in a course of minutes become corrupt, like those of other and older bushes, and consequently as wretched: and in philosophy how small our progress! Alas! art is long, and life is short! My friends would comfort me with the idea of a name, they say, I shall leave behind me; and they tell me I have lived long enough to nature and to glory. But what will fame be to an ephemera who no longer exists? and what will become of all history in the eighteenth hour, when the world itself, even the whole Moulin Joly, shall come to its end, and be buried in universal ruin?"

To me, after all my eager pursuits, no solid pleasures now remain, but the reflection of a long life spent in meaning well, the sensible conversation of a few good lady ephemeræ, and now and then a kind smile and a tune from the ever amiable *Brilliante.* B. FRANKLIN.

THE WHISTLE.

(TO MADAME BRILLON.)

Passy, November 10, 1779.

I RECEIVED my dear friend's two letters, one for Wednesday and one for Saturday. This is again Wednesday. I do not deserve one for to-day, because I have not answered the former. But indolent as I am, and averse to writing,

the fear of having no more of your pleasing epistles, if I do not contribute to the correspondence, obliges me to take up my pen; and as Mr. B. has kindly sent me word, that he sets out to-morrow to see you, instead of spending this Wednesday evening as I have done its name-sakes, in your delightful company, I sit down to spend it in thinking of you, in writing to you, and in reading over and over again your letters.

I am charmed with your description of Paradise, and with your plan of living there; and I approve much of your conclusion, that, in the mean time, we should draw all the good we can from this world. In my opinion, we might all draw more good from it than we do, and suffer less evil, if we would take care not to give too much for *whistles*. For to me it seems, that most of the unhappy people we meet with, are become so by neglect of that caution.

You ask what I mean? You love stories, and will excuse my telling one of myself.

When I was a child of seven years old, my friends, on a holiday, filled my pocket with coppers. I went directly to a shop where they sold toys for children; and, being charmed with the sound of a *whistle*, that I met by the way in the hands of another boy, I voluntarily offered and gave all my money for one. I then came home, and went whistling all over the house, much pleased with my *whistle*, but disturbing all the family. My brothers, and sisters, and cousins, understanding the bargain I had made, told me I had given four times as much for it as it was worth; put me in mind what good things I might have bought with the rest of the money; and laughed at me so much for my folly, that I cried with vexation; and the reflection gave me more chagrin than the *whistle* gave me pleasure.

This however was afterwards of use to me, the impression continuing on my mind; so that often, when I was tempted to buy some unnecessary thing, I said to myself, *Don't give too much for the whistle;* and I saved my money.

As I grew up, came into the world, and observed the actions of men, I thought I met with many, very many, who *gave too much for the whistle.*

When I saw one too ambitious of court favor, sacrificing his time in attendance on levées, his repose, his liberty, his virtue, and perhaps his friends, to attain it, I have said to myself, *This man gives too much for his whistle.*

When I saw another fond of popularity, constantly employing himself in

political bustles, neglecting his own affairs, and ruining them by that neglect, *He pays, indeed*, said I, *too much for his whistle.*

If I knew a miser, who gave up every kind of comfortable living, all the pleasure of doing good to others, all the esteem of his fellow-citizens, and the joys of benevolent friendship, for the sake of accumulating wealth, *Poor man*, said I, *you pay too much for your whistle.*

When I met with a man of pleasure, sacrificing every laudable improvement of the mind, or of his fortune, to mere corporeal sensations, and ruining his health in their pursuit, *Mistaken man*, said I, *you are providing pain for yourself, instead of pleasure: you give too much for your whistle.*

If I see one fond of appearance, or fine clothes, fine houses, fine furniture, fine equipages, all above his fortune, for which he contracts debts, and ends his career in a prison, *Alas!* say I, *he has paid dear, very dear, for his whistle.*

When I see a beautiful sweet-tempered girl, married to an ill-natured brute of a husband, *What a pity*, say I, *that she should pay so much for a whistle!*

In short, I conceive that great part of the miseries of mankind are brought upon them by the false estimates they have made of the value of things, and by their *giving too much for their whistles.*

Yet I ought to have charity for these unhappy people, when I consider, that with all this wisdom of which I am boasting, there are certain things in the world so tempting, for example, the apples of king John, which happily are not to be bought; for if they were put to sale by auction, I might very easily be led to ruin myself in the purchase, and find that I had once more given too much for the *whistle.*

Adieu, my dearest friend, and believe me ever yours very sincerely and with unalterable affection,

B. FRANKLIN.

A PETITION

TO THOSE WHO HAVE THE SUPERINTENDENCY OF EDUCATION.

I ADDRESS myself to all the friends of youth, and conjure them to direct their compassionate regards to my unhappy fate, in order to remove the prejudices of which I am the victim. There are twin sisters of us; and the two eyes of man do not more resemble, nor are capable of being upon better terms with each other, than my sister and myself, were it not for the partiality of our

parents, who make the most injurious distinctions between us. From my infancy, I have been led to consider my sister as a being of a more elevated rank. I was suffered to grow up without the least instruction, while nothing was spared in her education. She had masters to teach her writing, drawing, music, and other accomplishments; but if by chance I touched a pencil, a pen, or a needle, I was bitterly rebuked; and more than once I have been beaten for being awkward, and wanting a graceful manner. It is true, my sister associated me with her upon some occasions; but she always made a point of taking the lead, calling upon me only from necessity, or to figure by her side.

But conceive not, sirs, that my complaints are instigated merely by vanity.—No; my uneasiness is occasioned by an object much more serious. It is the practice in our family, that the whole business of providing for its subsistence falls upon my sister and myself. If any indisposition should attack my sister —and I mention it in confidence upon this occasion, that she is subject to the gout, the rheumatism, and cramp, without making mention of other accidents—what would be the fate of our poor family? Must not the regret of our parents be excessive, at having placed so great a difference between sisters who are so perfectly equal? Alas! we must perish from distress: for it would not be in my power even to scrawl a suppliant petition for relief, having been obliged to employ the hand of another in transcribing the request which I have now the honor to prefer to you.

Condescend, sirs, to make my parents sensible of the injustice of an exclusive tenderness, and of the necessity of distributing their care and affection among all their children equally. I am, with a profound respect, sirs, your obedient servant,

THE LEFT HAND.

THE HANDSOME AND DEFORMED LEG.

THERE are two sorts of people in the world, who, with equal degrees of health and wealth, and the other comforts of life, become, the one happy, and the other miserable. This arises very much from the different views in which they consider things, persons, and events; and the effect of those different views upon their own minds.

In whatever situation men can be placed, they may find conveniences and inconveniences; in whatever company, they may find persons and conversation

more or less pleasing; at whatever table, they may meet with meats and drinks of better and worse taste, dishes better and worse dressed; in whatever climate, they will find good and bad weather; under whatever government, they may find good and bad laws, and good and bad administration of those laws; in whatever poem, or work of genius, they may see faults and beauties; in almost every face, and every person, they may discover fine features and defects, good and bad qualities.

Under these circumstances, the two sorts of people above-mentioned fix their attention; those who are disposed to be happy, on the conveniences of things, the pleasant parts of conversation, the well-dressed dishes, the goodness of the wines, the fine weather, &c. and enjoy all with cheerfulness. Those who are to be unhappy, think and speak only of the contraries. Hence they are continually discontented themselves, and, by their remarks, sour the pleasures of society, offend personally many people, and make themselves everywhere disagreeable. If this turn of mind was founded in nature, such unhappy persons would be the more to be pitied. But as the disposition to criticise, and to be disgusted, is perhaps taken up originally by imitation, and is unawares grown into a habit, which, though at present strong, may nevertheless be cured, when those who have it are convinced of its bad effects on their felicity, I hope this little admonition may be of service to them, and put them on changing a habit, which, though in the exercise it is chiefly an act of imagination, yet has serious consequences in life, as it brings on real griefs and misfortunes. For, as many are offended by, and nobody loves this sort of people, no one shows them more than the most common civility and respect, and scarcely that; and this frequently puts them out of humor, and draws them into disputes and contentions. If they aim at obtaining some advantage in rank or fortune, nobody wishes them success, or will stir a step, or speak a word, to favor their pretensions. If they incur public censure or disgrace, no one will defend or excuse, and many join to aggravate their misconduct, and render them completely odious. If these people will not change this bad habit, and condescend to be pleased with what is pleasing, without fretting themselves and others about the contraries, it is good for others to avoid an acquaintance with them; which is always disagreeable, and sometimes very inconvenient, especially when one finds oneself entangled in their quarrels.

An old philosophical friend of mine was grown, from experience, very cautious in this particular, and carefully avoided any intimacy with such people.

He had, like other philosophers, a thermometer to show him the heat of the weather, and a barometer to mark when it was likely to prove good or bad; but there being no instrument invented to discover, at first sight, this unpleasing disposition in a person, he for that purpose made use of his legs; one of which was remarkably handsome, the other, by some accident, crooked and deformed. If a stranger, at the first interview, regarded his ugly leg more than his handsome one, he doubted him. If he spoke of it, and took no notice of the handsome leg, that was sufficient to determine my philosopher to have no further acquaintance with him. Every body has not this two-legged instrument; but every one, with a little attention, may observe signs of that carping, fault-finding disposition, and take the same resolution of avoiding the acquaintance of those infected with it. I therefore advise those critical, querulous, discontented, unhappy people, that if they wish to be respected and beloved by others, and happy in themselves, they should *leave off looking at the ugly leg.*

MORALS OF CHESS.

[PLAYING at chess is the most ancient and most universal game known among men; for its original is beyond the memory of history, and it has, for numberless ages, been the amusement of all the civilised nations of Asia, the Persians, the Indians, and the Chinese. Europe has had it above a thousand years; the Spaniards have spread it over their part of America; and it has lately begun to make its appearance in the United States. It is so interesting in itself, as not to need the view of gain to induce engaging in it; and thence it is seldom played for money. Those therefore who have leisure for such diversions, cannot find one that is more innocent: and the following piece, written with a view to correct (among a few young friends) some little improprieties in the practice of it, shows at the same time that it may, in its effects on the mind, be not merely innocent, but advantageous, to the vanquished as well as the victor.]

THE game of chess is not merely an idle amusement. Several very valuable qualities of the mind, useful in the course of human life, are to be acquired or strengthened by it, so as to become habits, ready on all occasions. For life is a kind of chess, in which we have often points to gain, and competitors or adversaries to contend with, and in which there is a vast variety of good and

evil events, that are, in some degree, the effects of prudence or the want of it. By playing at chess, then, we may learn,

I. *Foresight*, which looks a little into futurity, and considers the consequences that may attend an action: for it is continually occurring to the player, "If I move this piece, what will be the advantage of my new situation? What use can my adversary make of it to annoy me? What other moves can I make to support it, and to defend myself from his attacks?"

II. *Circumspection*, which surveys the whole chess-board, or scene of action; the relations of the several pieces and situations, the dangers they are respectively exposed to, the several possibilities of their aiding each other, the probabilities that the adversary may take this or that move, and attack this or the other piece, and what different means can be used to avoid his stroke, or turn its consequences against him.

III. *Caution*, not to make our moves too hastily. This habit is best acquired by observing strictly the laws of the game; such as, "If you touch a piece, you must move it somewhere; if you set it down, you must let it stand:" and it is therefore best that these rules should be observed, as the game thereby becomes more the image of human life, and particularly of war; in which, if you have incautiously put yourself into a bad and dangerous position, you cannot obtain your enemy's leave to withdraw your troops, and place them more securely, but you must abide all the consequences of your rashness.

And, lastly, we learn by chess the habit of *not being discouraged by present bad appearances in the state of our affairs*, the habit of *hoping for a favorable change*, and that of *persevering in the search of resources*. The game is so full of events, there is such a variety of turns in it, the fortune of it is so subject to sudden vicissitudes, and one so frequently, after long contemplation, discovers the means of extricating oneself from a supposed insurmountable difficulty, that one is encouraged to continue the contest to the last, in hopes of victory by our own skill, or at least of getting a stale mate, by the negligence of our adversary. And whoever considers, what in chess he often sees instances of, that particular pieces of success are apt to produce presumption, and its consequent inattention, by which the losses may be recovered, will learn not to be too much discouraged by the present success of his adversary, nor to despair of final good fortune upon every little check he receives in the pursuit of it.

That we may therefore be induced more frequently to choose this beneficial amusement, in preference to others which are not attended with the same

advantages, every circumstance which may increase the pleasures of it should be regarded; and every action or word that is unfair, disrespectful, or that in any way may give uneasiness, should be avoided, as contrary to the immediate intention of both the players, which is to pass the time agreeably.

Therefore, first, if it is agreed to play according to the strict rules, then those rules are to be exactly observed by both parties, and should not be insisted on for one side, while deviated from by the other—for this is not equitable.

Secondly, if it is agreed not to observe the rules exactly, but one party mands indulgencies, he should then be as willing to allow them to the other.

Thirdly, no false move should ever be made to extricate yourself out of difficulty, or to gain an advantage. There can be no pleasure in playing with a person once detected in such unfair practice.

Fourthly, if your adversary is long in playing, you ought not to hurry him, or express any uneasiness at his delay. You should not sing, nor whistle, nor look at your watch, nor take up a book to read, nor make a tapping with your feet on the floor, or with your fingers on the table, nor do any thing that may disturb his attention. For all these things displease; and they do not show your skill in playing, but your craftiness or your rudeness.

Fifthly, you ought not to endeavor to amuse and deceive your adversary, by pretending to have made bad moves, and saying, that you have now lost the game, in order to make him secure and careless, and inattentive to your schemes: for this is fraud and deceit, not skill in the game.

Sixthly, you must not, when you have gained a victory, use any triumphing or insulting expression, nor show too much pleasure; but endeavor to console your adversary, and make him less dissatisfied with himself, by every kind of civil expression that may be used with truth, such as, "you understand the game better than I, but you are a little inattentive;" or, "you play too fast;" or, "you had the best of the game, but something happened to divert your thoughts, and that turned it in my favor."

Seventhly, if you are a spectator while others play, observe the most perfect silence. For if you give advice, you offend both parties, him against whom you give it, because it may cause the loss of his game, him in whose favor you give it, because, though it be good and he follows it, he loses the pleasure he might have had, if you had permitted him to think until it had occurred to himself.

Even after a move or moves, you must not, by replacing the pieces, show how it might have been placed better; for that displeases, and may occasion disputes and doubts about their true situation. All talking to the players lessens or diverts their attention, and is therefore unpleasing. Nor should you give the least hint to either party, by any kind of noise or motion. If you do, you are unworthy to be a spectator. If you have a mind to exercise or show your judgment, do it in playing your own game, when you have an opportunity, not in criticising, or meddling with, or counselling the play of others.

Lastly, if the game is not to be played rigorously, according to the rules above mentioned, then moderate your desire of victory over your adversary, and be pleased with one over yourself. Snatch not eagerly at every advantage offered by his unskilfulness or inattention; but point out to him kindly, that by such a move he places or leaves a piece in danger and unsupported; that by another he will put his king in a perilous situation, &c. By this generous civility (so opposite to the unfairness above forbidden) you may, indeed, happen to lose the game to your opponent, but you will win what is better, his esteem, his respect, and his affection, together with the silent approbation and goodwill of impartial spectators.

CONTE.

Il y avoit un officier, homme de bien, appelé Montresor, qui étoit très malade: son curé, croyant qu'il alloit mourir, lui conseilla de faire sa paix avec Dieu, afin d'être reçu en Paradis. "Je n'ai pas beaucoup d'inquiétude à ce sujet," dit Montresor, "car j'ai eu, la nuit dernière, une vision qui m'a tout-à-fait tranquillisé." "Quelle vision avez-vous eue?" dit le bon prêtre. "J'étois," répondit Montresor, "à la porte du Paradis, avec une foule de gens qui vouloient entrer. Et St. Pierre demandoit à chacun, de quelle religion il étoit? L'un répondoit, Je suis Catholique Romain. Hé bien, disoit St. Pierre, entrez, et prenez votre place là parmi les Catholiques. Un autre dit, qu'il étoit de l'église Anglicane. Hé bien, dit St. Pierre, entrez, et placez-vous là parmi les Anglicans. Un autre dit qu'il étoit Quaker. Entrez, dit St. Pierre, et prenez place parmi les Quakers. Enfin, mon tour étant arrivé, il me demanda de quelle religion j'étois? Hélas! répondis-je, malheureusement le pauvre Jacques Montresor n'en a point. C'est dommage, dit le Saint, je ne sais où vous placer; *mais entrez, toujours; vous vous mettrez où vous pourrez.*"

[*Translation.*]

A Tale.

An officer named Montresor, a worthy man, was very ill. The curate of his parish, thinking him likely to die, advised him to make his peace with God, that he might be received into Paradise. "I have not much uneasiness on the subject," said Montresor, "for I had a vision last night which has perfectly tranquillised my mind."—"What vision have you had?" said the good priest. "I was," replied Montresor, "at the gate of Paradise, with a crowd of people who wished to enter, and St. Peter inquired of every one what religion he was of? One answered, I am a Roman Catholic;—Well, said St. Peter, enter and take your place there among the *Catholics*. Another said he was of the Church of England;—Well, said the Saint, enter and place yourself there among the *Anglicans*. A third said he was a Quaker;—Enter, said St. Peter, and take your place among the *Quakers*. At length, my turn being come, he asked me of what religion I was? Alas! said I, poor Jacques Montresor has none. 'Tis pity, said the Saint; I know not where to place you, but *enter nevertheless, and place yourself where you can.*"

AN ARABIAN TALE.

Albumazar, the good magician, retired in his old age to the top of the lofty mountain Calabut; avoided the society of men, but was visited nightly by genii and spirits of the first rank, who loved him, and amused him with their instructive conversation.

Belubel the strong came one evening to see Albumazar; his height was seven leagues, and his wings when spread might overshadow a kingdom. He laid himself gently down between the long ridges of Elulem: the tops of the trees in the valley were his couch; his head rested on Calabut as on a pillow, and his face shone on the tent of Albumazar.

The magician spoke to him with rapturous piety of the wisdom and goodness of the Most High; but expressed his wonder at the existence of evil in the world, which he said he could not account for by all the efforts of his reason.

Value not thyself, my friend, said Belubel, on that quality which thou callest reason. If thou knewest its origin and its weakness, it would rather be matter of humiliation.

Tell me then, said Albumazar, what I do not know; inform my ignorance, and enlighten my understanding. Contemplate, said Albumazar, the scale of beings from an elephant down to an oyster. Thou seest a gradual diminution of faculties and powers, so small in each step, that the difference is scarce

perceptible. There is no gap, but the gradation is complete. Men in general do not know, but thou knowest, that in ascending from an elephant to the infinitely Great, Good, and Wise, there is also a long gradation of beings, who possess powers and faculties of which thou canst yet have no conception.

DIALOGUE

BETWEEN FRANKLIN AND THE GOUT.

Midnight, October 22, 1780.

Franklin.—Eh! Oh! Eh! What have I done to merit these cruel sufferings?

Gout.—Many things: you have ate and drank too freely, and too much indulged those legs of yours in their indolence.

Franklin.—Who is it that accuses me?

Gout.—It is I, even I, the Gout.

Franklin.—What! my enemy in person?

Gout.—No, not your enemy.

Franklin.—I repeat it; my enemy: for you would not only torment my body to death, but ruin my good name: you reproach me as a glutton and a tippler; now all the world that knows me will allow, that I am neither the one nor the other.

Gout.—The world may think as it pleases: it is always very complaisant to itself, and sometimes to its friends; but I very well know, that the quantity of meat and drink proper for a man, who takes a reasonable degree of exercise, would be too much for another, who never takes any.

Franklin.—I take—Eh! Oh!—as much exercise—Eh!—as I can, Madam Gout. You know my sedentary state, and on that account, it would seem, Madam Gout, as if you might spare me a little, seeing it is not altogether my own fault.

Gout.—Not a jot: your rhetoric and your politeness are thrown away; your apology avails nothing. If your situation in life is a sedentary one, your amusements, your recreations, at least, should be active. You ought to walk or ride; or, if the weather prevents that, play at billiards. But let us examine your course of life. While the mornings are long, and you have leisure to go abroad, what do you do? Why, instead of gaining an appetite for breakfast, by salutary exercise, you amuse yourself with books, pamphlets, or newspapers, which commonly are not worth the reading. Yet you eat an inordinate break-

fast, four dishes of tea, with cream, and one or two buttered toasts, with slices of hung beef, which I fancy are not things the most easily digested. Immediately afterward you sit down to write at your desk, or converse with persons who apply to you on business. Thus the time passes till one, without any kind of bodily exercise. But all this I could pardon, in regard, as you say, to your sedentary condition. But what is your practice after dinner? Walking in the beautiful gardens of those friends with whom you have dined, would be the choice of men of sense: yours is, to be fixed down to chess, where you are found engaged for two or three hours! This is your perpetual recreation, which is the least eligible of any for a sedentary man, because, instead of accelerating the motion of the fluids, the rigid attention it requires helps to retard the circulation and obstruct internal secretions. Wrapt in the speculations of this wretched game, you destroy your constitution. What can be expected from such a course of living, but a body replete with stagnant humors, ready to fall a prey to all kinds of dangerous maladies, if I, the gout, did not occasionally bring you relief by agitating these humors, and so purifying or dissipating them? If it was in some nook or alley in Paris, deprived of walks, that you played awhile at chess after dinner, this might be excusable; but the same taste prevails with you in Passy, Auteuil, Montmartre, or Sanoy, places where there are the finest gardens and walks, a pure air, beautiful women, and most agreeable and instructive conversation; all which you might enjoy by frequenting the walks. But these are rejected for this abominable game of chess. Fie, then, Mr. Franklin! But amidst my instructions, I had almost forgot to administer my wholesome corrections: so take that twinge—and that.

Franklin.—Oh! Eh! Oh! Ohhh! As much instructions as you please, Madam Gout, and as many reproaches; but pray, Madam, a truce with your corrections!

Gout.—No, sir, no—I will not abate a particle of what is so much for your good—therefore—

Franklin.—Oh! Ehhh!—It is not fair to say I take no exercise, when I do very often, going out to dine, and returning in my carriage.

Gout.—That of all imaginable exercise is the most slight and insignificant, if you allude to the motion of a carriage suspended on springs. By observing the degree of heat obtained by different kinds of motion, we may form an estimate of the quantity of exercise given by each. Thus, for example, if you turn out to walk in winter with cold feet, in an hour's time you will be in a

glow all over: ride on horseback, the same effect will scarcely be perceived by four hours' round trotting: but if you loll in a carriage, such as you have mentioned, you may travel all day, and gladly enter the last inn to warm your feet by a fire. Flatter yourself then no longer, that half an hour's airing in your carriage deserves the name of exercise. Providence has appointed few to roll in carriages, while he has given to all a pair of legs, which are machines infinitely more commodious and serviceable. Be grateful, then, and make a proper use of yours. Would you know how they forward the circulation of your fluids, in the very action of transporting you from place to place; observe when you walk, that all your weight is alternately thrown from one leg to the other; this occasions a great pressure on the vessels of the foot, and repels their contents: when relieved, by the weight being thrown on the other foot, the vessels of the first are allowed to replenish, and by a return of this weight, this repulsion again succeeds; thus accelerating the circulation of the blood. The heat produced in any given time, depends on the degree of this acceleration: the fluids are shaken, the humors attenuated, the secretions facilitated, and all goes well; the cheeks are ruddy, and health is established. Behold your fair friend at Auteuil:[1] a lady who received from bounteous nature more really useful science, than half a dozen such pretenders to philosophy as you, have been able to extract from all your books. When she honors you with a visit, it is on foot. She walks all hours of the day, and leaves indolence and its concomitant maladies to be endured by her horses. In this see at once the preservative of her health and personal charms. But when you go to Auteuil, you must have your carriage, though it is no further from Passy to Auteuil, than from Auteuil to Passy.

Franklin.—Your reasonings grow very tiresome.

Gout.—I stand corrected. I will be silent and continue my office: take that, and that.

Franklin.—Oh! Ohh! Talk on, I pray you!

Gout.—No, no; I have a good number of twinges for you to-night, and you may be sure of some more to-morrow.

Franklin.—What, with such a fever! I shall go distracted. Oh! Eh! Can no one bear it for me?

Gout.—Ask that of your horses; they have served you faithfully.

[1] Madame Helvetius.

Franklin.—How can you so cruelly sport with my torments?

Gout.—Sport! I am very serious. I have here a list of offences against your own health distinctly written, and can justify every stroke inflicted on you.

Franklin.—Read it then.

Gout.—It is too long a detail; but I will briefly mention some particulars.

Franklin.—Proceed. I am all attention.

Gout.—Do you remember how often you have promised yourself, the following morning, a walk in the grove of Boulogne, in the garden de la Muette, or in your own garden, and have violated your promise, alleging, at one time, it was too cold, at another too warm, too windy, too moist, or what else you pleased; when in truth it was too nothing, but your insuperable love of ease?

Franklin.—That I confess may have happened occasionally, probably ten times in a year.

Gout.—Your confession is very far short of the truth; the gross amount is one hundred and ninety-nine times.

Franklin.—Is it possible?

Gout.—So possible that it is fact; you may rely on the accuracy of my statement. You know Mr. Brillon's gardens, and what fine walks they contain: you know the handsome flight of an hundred steps, which lead from the terrace above to the lawn below. You have been in the practice of visiting this amiable family twice a-week after dinner, and as it is a maxim of your own, that "a man may take as much exercise in walking a mile up and down stairs, as in ten on level ground," what an opportunity was here for you to have had exercise in both these ways! Did you embrace it, and how often?

Franklin.—I cannot immediately answer that question.

Gout.—I will do it for you; not once.

Franklin.—Not once?

Gout.—Even so. During the summer you went there at six o'clock. You found the charming lady, with her lovely children and friends, eager to walk with you, and entertain you with their agreeable conversation; and what has been your choice? Why, to sit on the terrace, satisfying yourself with the fine prospect, and passing your eye over the beauties of the garden below, without taking one step to descend and walk about in them. On the contrary, you call for tea and the chess-board; and lo! you are occupied in your seat till nine o'clock, and that besides two hours' play after dinner; and then, instead

of walking home, which would have bestirred you a little, you step into your carriage. How absurd to suppose that all this carelessness can be reconcileable with health, without my interposition!

Franklin.—I am convinced now of the justness of poor Richard's remark, that "Our debts and our sins are always greater than we think for."

Gout.—So it is. You philosophers are sages in your maxims, and fools in your conduct.

Franklin.—But do you charge among my crimes, that I return in a carriage from Mr. Brillon's?

Gout.—Certainly: for having been seated all the while, you cannot object the fatigue of the day, and cannot want therefore the relief of a carriage.

Franklin.—What then would you have me do with my carriage?

Gout.—Burn it, if you choose: you would at least get heat out of it once in this way; or, if you dislike that proposal, here's another for you: observe the poor peasants who work in the vineyards and grounds about the villages of Passy, Auteuil, Chaillot, &c.: you may find every day among these deserving creatures, four or five old men and women, bent and perhaps crippled by weight of years, and too long and too great labor. After a most fatiguing day, these people have to trudge a mile or two to their smoky huts. Order your coachman to set them down. That is an act that will be good for your soul; and at the same time, after your visit to the Brillons, if you return on foot, that will be good for your body.

Franklin.—Ah! how tiresome you are!

Gout.—Well, then, to my office: it should not be forgotten that I am your physician. There.

Franklin.—Ohhh! what a devil of a physician!

Gout.—How ungrateful you are to say so! Is it not I who, in the character of your physician, have saved you from the palsy, dropsy, and apoplexy? one or other of which would have done for you long ago, but for me.

Franklin.—I submit, and thank you for the past, but intreat the discontinuance of your visits for the future; for in my mind, one had better die than be cured so dolefully. Permit me just to hint, that I have also not been unfriendly to *you*. I never fee'd physician, or quack of any kind, to enter the list against you: if then you do not leave me to my repose, it may be said you are ungrateful too.

Gout.—I can scarcely acknowledge that as any objection. As to quacks, I

despise them; they may kill you, indeed, but cannot injure me. And as to regular physicians, they are at last convinced, that the gout, in such a subject as you are, is no disease, but a remedy; and wherefore cure a remedy?—but to our business—There.

Franklin.—Oh! Oh!—for heaven's sake leave me; and I promise faithfully never more to play at chess, but to take exercise daily, and live temperately.

Gout.—I know you too well. You promise fair; but, after a few months of good health, you will return to your old habits; your fine promises will be forgotten like the forms of the last year's clouds. Let us then finish the account, and I will go. But I leave you with an assurance of visiting you again at a proper time and place; for my object is your good, and you are sensible now that I am your *real friend.*

To Madame Helvetius, at Auteuil.

* * * * * * *

——— "And now I mention your friends, let me tell you that I have in my way been trying to form some hypothesis to account for your having so many, and of such various kinds. I see that statesmen, philosophers, historians, poets, and men of learning of all sorts, are drawn around you, and seem as willing to attach themselves to you as straws about a fine piece of amber. It is not that you make pretension to any of their sciences; and if you did, similarity of studies does not always make people love one another. It is not that you take pains to engage them: artless simplicity is a striking part of your character. I would not attempt to explain it by the story of the ancient, who, being asked why philosophers sought the acquaintance of kings, and kings not that of philosophers, replied, that philosophers knew what they wanted, which was not always the case with kings. Yet thus far the comparison may go, that we find in your sweet society, that charming benevolence, that amiable attention to oblige, that disposition to please and be pleased, which we do not always find in the society of one another. It springs from you; it has its influence on us all; and in your company we are not only pleased with you, but better pleased with one another, and with ourselves.

"I am ever, with great respect and affection, &c. B. F."

A MADAME HELVETIUS.

CHAGRINE' de votre résolution barbare, prononcée si positivement hier au soir, de rester seule pendant la vie en honneur de votre cher mari, je me retirois chez moi, tombois sur mon lit, me croyois mort, et que je me trouvois dans les Champs Elisées.

On me demanda si j'avois envie de voir quelques personnages particuliers.—"Menez-moi chez les philosophes."—"Il y en a deux qui demeurent ici près dans ce jardin; ils sont de très-bons voisins, et très-amis l'un de l'autre."—"Qui sont-ils?" "Socrate et Helvétius." "Je les estime prodigieusement tous les deux; mais faites-moi voir premièrement Helvétius, parce que j'entends un peu de François et pas un mot de Grec."—Il m'a reçu avec beaucoup de courtoisie, m'ayant connu, disoit-il, de réputation il y avoit quelque temps. Il me demanda mille choses sur la guerre, et sur l'état présent de la religion, de la liberté, et du gouvernement en France.—"Vous ne demandez donc rien, lui dis-je, de votre chère amie Madame Helvétius; et cependant elle vous aime encore excessivement, et il n'y a qu'une heure que j'étois chez elle."—"Ah!" dit-il, "vous me faites ressouvenir de mon ancienne félicité. Mais il faut l'oublier pour être heureux ici. Pendant plusieurs des premières années, je n'ai pensé qu'à elle. Enfin je suis consolé. J'ai pris une autre femme; la plus semblable à elle que j'ai pu trouver. Elle n'est pas, il est vrai, tout-à-fait si belle, mais elle a autant de bon sens, beaucoup d'esprit, et elle m'aime infiniment. Son étude continuelle est de me plaire, et elle est sortie actuellement chercher le meilleur nectar et ambrosie pour me régaler ce soir: restez avec moi et vous la verrez." "J'apperçois," dis-je, "que votre ancienne amie est plus fidelle que vous: car plusieurs bons partis lui ont été offerts qu'elle a refusés tous. Je vous confesse que je l'ai aimée, moi, à la folie; mais elle étoit dure à mon égard, et m'a rejeté absolument pour l'amour de vous." "Je vous plains," dit-il, "de votre malheur; car vraiment c'est une bonne et belle femme, et bien aimable. Mais l'Abbé de la R****, et l'Abbé M****, ne sont-ils pas encore quelquefois chez elle?" "Oui assurément; car elle n'a pas perdu un seul de vos amis."—"Si vous aviez gagné l'Abbé M**** (avec du bon café à la crême) à parler pour vous, vous auriez peut-être réussi; car il est raisonneur subtil comme Duns Scotus ou St. Thomas; il met ses arguments en si bon ordre qu'ils deviennent presque irrésistibles. Et si l'Abbé de la R**** avoit été gagné (par quelque belle édition d'un vieux classique) à parler *contre* vous, cela auroit été mieux: car

j'ai toujours observé, que quand il lui conseilla quelque chose, elle avoit un penchant très-fort à faire le revers."—A ces mots entra la nouvelle Madame Helvétius avec le nectar; à l'instant je l'ai reconnue pour être Madame Franklin, mon ancienne amie Américaine. Je l'ai réclamée, mais elle me dit froidement: "J'ai été votre bonne femme quarante-neuf années et quatre mois;—presqu'un demi-siècle; soyez content de cela. J'ai formé ici une nouvelle connexion, qui durera à l'éternité."

Indigné de ce refus de mon Euridice, je pris de suite la résolution de quitter ces ombres ingrates, et revenir en ce bon monde, revoir le soleil et vous. —Me voici!—*Vengeons-nous!*

[*Translation.*]

Letter to Madame Helvetius.

Mortified at the barbarous resolution pronounced by you so positively yesterday evening, that you would remain single the rest of your life, as a compliment due to the memory of your husband, I retired to my chamber. Throwing myself upon my bed, I dreamt that I was dead, and was transported to the Elysian Fields. I was asked whether I wished to see any persons in particular: to which I replied, that I wished to see the philosophers. "There are two who live here at hand in this garden; they are good neighbors, and very friendly towards one another." "Who are they?" "Socrates and Helvetius." "I esteem them both highly; but let me see Helvetius first, because I understand a little French, but not a word of Greek." I was conducted to him: he received me with much courtesy, having known me, he said, by character, some time past. He asked me a thousand questions relative to the war, to the present state of religion, of liberty, and of the government in France. "You do not inquire, then," said I, "after your dear friend Madame Helvetius; yet she loves you exceedingly: I was in her company not more than an hour ago." "Ah," said he, "you make me recur to my past happiness, which ought to be forgotten in order to be happy here. For many years I could think of nothing but her, though at length I am consoled. I have taken another wife, the most like her that I could find: she is not indeed altogether so handsome, but she has a great fund of wit and good sense; and her whole study is to please me. She is at this moment gone to fetch the best nectar and ambrosia to regale me: stay here a while and you will see her." "I perceive," said I, "that your former friend is more faithful to you than you are to her: she has had several good offers, but has refused them all. I will confess to you that I loved her extremely; but she was cruel to me, and rejected me peremptorily for your sake." "I pity you sincerely," said he, "for she is an excellent woman,—handsome, and amiable. But do not the Abbé de la R****, and the Abbé M*****, visit her?"—"Certainly they do: not one of your friends has dropped her acquaintance." "If you had gained the Abbé M***** with a bribe of good coffee and cream, perhaps you would have succeeded, for he is as deep a reasoner as Duns Scotus or Saint Thomas: he arranges and methodises his arguments in such a manner that they are almost irresistible. Or, if by a fine edition of some old classic, you had gained the Abbé de la R**** to speak *against* you, that would have been still better; as I always observed, that when he recommended

any thing to her, she had a great inclination to do directly the contrary." As he finished these words the new Madame Helvetius entered with the nectar, and I recognised her immediately as my former American friend, Mrs. Franklin! I reclaimed her, but she answered me coldly: "I was a good wife to you for forty-nine years and four months,—nearly half a century; let that content you. I have formed a new connexion here, which will last to eternity." Indignant at this refusal of my Euridice, I immediately resolved to quit those ungrateful shades, and return to this good world again, to behold the sun and you! Here I am—let us *avenge ourselves*.[1]

TRÈS-HUMBLE REQUETE

PRE'SENTE'E A MADAME HELVE'TIUS PAR SES CHATS.

Très-illustre et très-bonne Dame,

UNE nouvelle affreuse vient troubler le bonheur dont nous jouissions dans votre basse-cour et dans votre bûcher. Nous apprenons que sur un exposé calomnieux, nos ennemis, vos Abbés,[2] vous ont fait porter une sentence de proscription contre nous; qu'à l'aide d'une invention diabolique, nous devons être pris, mis dans un tonneau, roulés jusqu'à la rivière et abandonnés à la merci des flots; et au moment où nous vous griffonnons notre très-humble requête, nous entendons les coups de la hâche et du marteau de votre cocher, qui façonne l'instrument du supplice qu'on nous prépare.

Mais, très-illustre dame, serons-nous donc condamnés sans être entendus; et serons-nous les seules de tant de créatures vivantes à vos dépens qui ne trouverons pas votre âme juste et sensible? Nous voyons tous les jours vos bienfaisantes mains nourrir deux ou trois cents poulets, autant de serins, des pigeons sans nombre, tous les moineaux de la banlieue, tous les merles du Bois de Boulogne, et jusqu'à des chiens; et nous seuls cesserions d'éprouver les effets de votre bienfaisance, et, ce qui est affreux à penser, nous deviendrions les objets d'une cruauté bien étrangère à votre âme et que vous n'aurez jamais eue que pour nous. Non, la bonté naturelle de votre cœur vous ramènera à des sentimens plus dignes de votre *chatéité*.

Eh, quels crimes avons-nous commis? On nous accuse, (le dirons-nous jusqu'où s'emporte la calomnie?) on nous accuse de manger vos poulets lorsqu'ils sont encore jeunes, de détourner de tems en tems quelques pigeons, de guetter sans cesse vos serins et d'en accrocher quelques-uns par les mailles du treillage de votre volière, et de laisser les souris infester votre maison.

[1] To appease prudery—the parties were between 70 and 80 years of age, when this gallant *plaisanterie* was written.

[2] Morellet et La Roche.

Mais suffit-il d'imputer des crimes pour faire des coupables? Nous pouvons repousser ces horribles accusations. Qu'il nous soit d'abord permis d'observer qu'on ne les appuie d'aucunes preuves. Quand on produiroit les pieds de quelques pigeons ou les plumes d'un poulet, sont-ce là des témoins qui puissent être admis dans quelque tribunal que ce soit? Mais les grands crimes sont les suites de la misère et du besoin, et nous recevons tous les jours de vous, à dix-huit chats que nous sommes, une subsistance abondante. Il ne nous manque rien. Egratignerions-nous la main qui nous nourrit? Plus d'une fois, sous vos yeux, vos poulets sont venus manger avec nous au même plat, sans que vous ayez apperçu de notre part le plus léger mouvement d'impatience; et si l'on vous dit que nous ne mangeons jamais de poulets lorsqu'on nous observe, que c'est la nuit que nous commettons les meurtres dont on nous accuse, nous répondrons que ce sont nos calomniateurs qui se cachent dans les ténèbres pour tramer contre nous leurs lâches complots, puisqu'ils sont réduits à nous imputer des crimes nocturnes, que dément sans cesse notre conduite de tout le jour.

Mais, disent nos ennemis, la basse-cour de Madame lui coûte 25 louis par an, il s'y élève environ deux ou trois cents poulets, elle n'en mange pas cinquante, qui lui reviennent, par sa grande économie, à 12 liv. la pièce; et que devient le reste?

Nous oserons le demander, d'abord nous a-t-on donné les poulets en compte et en garde, et pouvons-nous en répondre? Au milieu de ce grand nombre d'êtres destructeurs, les hommes, tous convaincus que les poulets ne sont au monde que pour être mangés par eux, ce n'est pas sur nous que doivent porter les premiers soupçons. Il se fait tous les dimanches à la porte du Bois de Boulogne et dans les cabarets d'Auteuil cent fricassées; n'est-il pas plus que vraisemblable qu'il s'y glisse quelques-uns de vos poulets? et certes ce n'est pas de nous que les aubergistes les tiennent. Après tout, Madame, et sans prétendre faire l'apologie des voleurs de poulets, qu'il nous soit permis d'observer que quelles que soient les causes qui en diminuent un peu le nombre, elles sont dans l'ordre de la nature et salutaires pour vous-même dans leurs effets, puisqu'elles contiennent dans des limites convenables la multiplication de cette espèce, qui convertiroit bientôt votre maison toute entière en un poulaillier, et qui vous réduiroit à n'avoir plus de chemises pour avoir plus de poulets.

Quant aux pigeons, on a vu disparoître, il est vrai, plusieurs des enfans de *Coco*;[1] mais il ne faut pas que votre tendresse pour lui, qui va jusqu'à lui laisser

[1] Pigeon apprivoisé et favori de Madame Helvétius.

casser vos porcelaines pourvu qu'il daigne manger dans votre main, vous rende injuste envers nous. Où est la preuve que nous ayons mangé ses enfans? Lui et ses pareils s'approchent-ils jamais de nous? Toujours sur les toits, ou se tenant à distance, ne nous montrent-ils pas une défiance dont nous aurions le droit d'être blessés? Qu'on visite tout le bûcher au printems prochain; et si l'on découvre quelque trace du meurtre, nous serons les premiers à rechercher et à livrer le coupable: mais quoi, les pigeons ne sont pas, comme nous autres pauvres chats, attachés au sol qui les a vu naître; ils peuvent voler par les airs à une autre patrie; ceux qui vous manquent, jaloux sans doute de la préférence que vous montrez à quelques-uns d'entre eux, ont été chercher l'égalité dans des colombiers républicains, plutôt que de traîner l'aile sous la domination insolente de vos pigeons favoris.

L'accusation qu'on intente contre nous d'avoir attrapé quelques-uns de vos serins, est une imposture grossière. Les mailles de leurs volière sont si petites, que lorsqu'en jouant nous essayons d'y passer nos pattes, nous avons beaucoup de peine à les en retirer. Nous nous amusons, il est vrai, quelquefois à voir de près leurs jeux innocens; mais nous n'avons pas à nous reprocher le sang d'aucun de ces jolis oiseaux.

Nous ne nous défendrons pas de même d'avoir mangé autant de moineaux, de merles et de grives, que nous en avons pu attraper: mais ici nous avons pour nous vos Abbés mêmes, nos plus cruels ennemis: ils se plaignent sans cesse du dégât de cerises que les moineaux font, disent-ils, à leur préjudice. Le Sieur Abbé M. montre une haine ardente contre les grives et les merles, qui dépouillent vos treilles de raisins, ainsi que lui. Mais il nous semble, très-illustre Dame, qu'il vaudroit autant que vos raisins fussent mangés par des merles que par des Abbés, et qu'en vain ferons-nous la chasse à ces pillards ailés si vous toléréz chez vous d'autres voleurs à deux pieds sans plumes qui y font encore de plus grands dégâts.

Nous savons qu'on nous accuse aussi de manger les rossignols qui ne volent rien, et qui chantent, dit-on, fort agréablement. Il se peut en effet que nous en ayons croqué quelques-uns, dans l'ignorance où nous étions de votre affection particulière pour eux; mais leur plumage terne et gris ressemble beaucoup à celui des moineaux, et nous ne nous connoissons pas assez en musique pour distinguer le ramage des uns et des autres. Un chat de *M. Piccini*[1] nous a dit, que quand on ne savoit que *miauler* on ne pouvoit pas juger de l'art du chant, et cette

[1] Compositeur *Italien*.

maxime suffit à notre justification. Cependant nous mettrons désormais le plus grand soin à distinguer les *Gluckistes*,[1] qui sont, nous a-t-il dit, les moineaux, des *Piecinistes*, qui sont les rossignols. Nous vous supplions seulement de nous pardonner les erreurs où nous pourrions tomber en dénichant quelque couvée de *Piccinistes*, qu'il est impossible de reconnoître lorsqu'ils sont sans plumes, et qu'ils n'ont pas encore appris à chanter.

La dernière imputation que nous repousserons, très-illustre Dame, est celle qu'on tire contre nous du grand nombre de souris dont votre maison est infestée. Elles font, dit-on, un dégât horrible dans votre sucre et vos confitures; elles rongent les livres de vos savans, et jusqu'aux mules de Mademoiselle Lullier[2] dans le tems même qu'elle marche. On prétend que les chats n'étant créés et mis au monde par la Providence, (qui veille avec une égale bonté sur les chats et les souris,) que pour manger les souris, quand ils ne remplissent pas leur destination, on n'a rien de mieux à faire que de les noyer.

Certainement, très-illustre Dame, il vous est aisé de reconnoître le langage de l'intérêt personnel dans la bouche de nos accusateurs. Le Sieur Cabanis,[3] qui fait chez vous une consommation énorme de confitures et qui va sans cesse dérobant des morceaux de sucre lorsqu'il croit n'être pas vu, a ses raisons pour vous faire regarder comme un crime capital la gourmandise de quelques souris qui écornent un pain, ou entament avant lui un pot de gelée de groseilles: mais il montre une âme encore plus atroce qu'intéressée lorsqu'il nous juge dignes de mort parceque nous n'empêchons pas ces petites bêtes de faire la millième partie d'un dégât que lui-même, tout grand qu'il est, fait sans discrétion comme sans remords: et pousseroit-il plus loin sa barbarie envers nous si, comme lui et les souris, nous étions nous-mêmes des animaux *sucro-phages* et *confituri-vores*? N'est-il pas manifeste que sa gourmandise seule lui inspire des sentimens si cruels, et pourriez-vous leur donner entrée dans votre cœur?

Pour les livres du Sieur Abbé de la Roche et de cet autre savant,[4] dont nous avons lu tout-à-l'heure le discours à l'Académie enveloppant un mou de veau que vous avez eu la bonté de nous faire donner, quel est donc le grand mal que les souris mangent un peu de leurs bouquins? à quoi leurs servent toutes leurs lectures? Depuis qu'ils vivent auprès de vous, ne doivent-ils pas s'être pleinement convaincus de l'inutilité du savoir? Ils vous voient bonne, sans le secours d'aucun *Traité de Morale*; aimable sans avoir lu *l'Art de Plaire* de notre

[1] *Gluck*, compositeur *Allemand*.
[2] Vieille femme-de-chambre de Madame H.
[3] Ami de Madame H. demeurant chez elle.
[4] L'Abbé Morellet.

historiographe Moncrief, et heureuse sans connoître *le Traité du Bonheur* du malheureux Maupertuis ; en même tems qu'ils sont les témoins journaliers de votre profonde ignorance. Ils savent beaucoup de choses, mais ils ignorent l'art que vous savez si bien de vous passer de rien savoir. Votre orthographe n'est pas beaucoup meilleure que la nôtre, et votre écriture ne vaut pas mieux que notre griffonage. Vous écrivez *boncure* pour *bonheur ;* mais vous possédez la chose sans savoir comment son nom s'écrit ; enfin, ce bonheur même qu'ils ne savent pas puiser dans leurs livres, du haut de votre ignorance vous le répandez sur eux. Les souris ne leur font donc pas un si grand tort.

Quant aux mules de Mademoiselle Luillier, pour peu qu'elle voulût aller moins lentement, les souris ne lui mangeroient pas les pieds ; et il est étrange qu'on nous condamne à la mort parceque votre femme-de-chambre n'a guères plus de mouvement qu'un limaçon.

Ces raisons si fortes ne sont pas encore les seules qui peuvent nous excuser envers vous des dégâts que les souris font dans votre maison.

Ah ! très-illustre Dame, en quelle conscience peut-on se plaindre de ce que nous ne prenons pas vos souris, lorsque vous avez sans cesse auprès de vous deux monstres altérés de notre sang, qui ne nous permettent pas d'approcher de votre chère personne comme la reconnoissance et le devoir nous y porteroient ? deux chiens, c'est tout dire ; animaux nourris dans la haine des chats, dont les aboiemens continuels nous remplissent de terreur. Comment ose-t-on nous reprocher de nous tenir éloignés des lieux où règnent ces animaux féroces, en qui la nature a mis l'aversion pour notre race et la force pour la détruire ? Encore, si nous n'avions affaire qu'à des chiens François ; leur haine ne seroit pas si active, leur ferocité seroit moindre ; mais vous êtes toujours accompagnée d'un *bull-dog* que vous avez fait venir d'Angleterre, (au mépris des sages dispositions de M. le Contrôleur Général) et qui nous hait doublement, comme chats d'abord, et de plus comme *chats François.* Nous voyons, sous nos yeux, tous les jours les cruels effets de sa rage dans la queue dépouillée de notre frère *Le Noir.* Notre zèle pour votre service, et même le goût que nous avons pour les souris nous conduiroit à la chasse dans vos appartemens, si nous n'en étions pas bannis par ces ennemis redoutables que vous en avez rendus les maîtres. Qu'on cesse donc de nous reprocher les désordres que causent chez vous les souris, puisqu'on nous met dans l'impossibilité de les réprimer.

Hélas ! ils ne sont plus ces tems heureux où l'illustre chat *Pompon* régnoit dans ces mêmes lieux, dormoit sur vos genoux, et reposoit sur votre couche ;

où cette *Zémire*,[1] aujourd'hui si ardente à nous chasser de chez vous, et qui entre en fureur au seul mot de chat, faisoit humblement sa cour au favori dont elle occupe aujourd'hui la place. Alors nous marchions la queue levée dans toute la maison. Feu *M. Pompon* daignoit quelquefois partager avec le dernier d'entre nous les lapins que Sa Majesté lui envoyoit de sa chasse, et à l'ombre du crédit de cet illustre favori nous jouissions de quelque paix et de quelque bonheur. Cet heureux tems n'est plus! Nous vivons sous un règne de *chien*, et nous regrettons sans cesse le *chat* sous l'empire duquel nous avons coulé de si beaux jours! Aussi allons-nous toutes les nuits arroser de nos pleurs le pied du cyprès que couvre sa tombe.

Ah! très-illustre Dame, que le souvenir du chat que vous avez tant aimé, vous touche au moins de quelque pitié pour nous. Nous ne sommes pas à la vérité de sa race, puisqu'il fut voué dès sa jeunesse à la *chasteté*; mais nous sommes de son espèce. Ses mânes, errans encore dans ces lieux, vous demandent la révocation de l'ordre sanguinaire qui menace nos jours: nous employerons tous ceux que vous conserverez à vous miauler notre vive reconnoissance, et nous la transmettrons aux cœurs de nos enfans et des enfans de nos enfans.

[*Translation.*]

AN HUMBLE PETITION,

PRESENTED TO MADAME HELVETIUS BY HER CATS.

MOST ILLUSTRIOUS AND EXCELLENT LADY,

A TERRIBLE piece of news has just reached us to interrupt the happiness we enjoyed in your poultry-yard and wood-yard. We learn, that in consequence of certain calumnious representations on the part of our enemies your Abbés,[2] a sentence of proscription has been issued against us, and that by means of a diabolical invention, we are all to be seized, put into a cask, rolled down to the river, and abandoned to the mercy of the waters. At the moment in which we are drawing up this our humble request, we hear the strokes of the hammer and hatchet from the hands of your coachman, who is employed to frame the instrument of our destruction.

But, most illustrious lady, shall we be condemned without being heard? and shall we be the only creatures among so many fed and nourished by you, who do not find your bosom alive to justice and compassion?—We see your beneficent hand every day feeding two or three hundred

[1] Petite chienne. [2] The Abbés Morellet and La Roche.

chickens, as many canary-birds, pigeons without number, all the sparrows of the neighbothood, all the blackbirds of the Wood of Boulogne—nay, even the very dogs of your domain; and shall we alone not only cease to experience the effects of your beneficence, but, what is more terrible to think of, become the objects of a cruelty wholly foreign to your nature, and never exercised but towards us. No, the natural goodness of your heart will recal in you sentiments more worthy of your *catology*.

Alas! what are the crimes that we have committed? We are accused—to what lengths will not calumny transport the heart!—we are accused of eating your chickens while they are still young, of making depredations from time to time upon your pigeons, of watching your canary-birds incessantly, and seizing any that come near enough to the lattice of your aviary, and of suffering the mice to infest your house unmolested.

But are imputed crimes sufficient to render any one guilty? These horrible accusations we can easily repel. In the first place, it must be observed, that they do not rest upon any proofs. Granted that the feet of some pigeons, or the feathers of some chickens may be produced; can these be admitted as evidence before any tribunal upon earth? Great crimes are, besides, the consequences of great misery and want, and we receive every day from you, to the number of eighteen cats of which our troop consists, abundant means of subsistence; nothing is wanting to us. And can we be supposed to scratch the hand by which we are nourished? Have you not, more than once, with your own eyes seen your chickens come and eat off the same dish with us, without the least hostile movement on our part? And if you are told, that we never eat the chickens when conscious that we are observed; that it is by night our murders are committed,—we answer, that it is our calumniators who hide themselves under the veil of darkness to frame their cruel plots against us. This we may the rather say, since they are reduced to impute to us nocturnal crimes, which are contradicted by our conduct throughout the day.

But, say our enemies, the poultry-yard of our most illustrious lady is maintained at an expense of twenty-five Louis annually, while of two or three hundred chickens reared there, she never eats more than fifty; so that, from her great economy, they cost her only twelve livres each: what then becomes of the rest?

We will ask, in the first place, were the chickens numbered and consigned to our care, and are we answerable for them? Surrounded by so many destructive beings, by mankind in particular, who are firmly persuaded that chickens were only created to be eaten by them, is it on us that the first suspicion can with justice fall? Every Sunday at the gate of the Wood of Boulogne, and in the public-houses of Auteuil, a hundred fricassees are served up; is it not probable that some of your chickens may have glided gently in among them? and certainly it is not by us that they are remitted to the innkeepers. After all, madam, without wishing to become the apologists of chicken-stealers, let us be permitted to observe, that whatever may be the causes which occasion the diminution complained of in your stock of poultry, they are in the order of nature, and produce a salutary effect to yourself, since they restrain within due bounds the multiplication of this species, which, if suffered to go on unrestrained, would soon convert your whole house into a receptacle for chickens, and reduce you to going without a shift, that no limits may be placed to the number of your fowls.

As to the pigeons, it must be allowed that several of the children of *Coco*[1] have disappeared; but you must not permit your tenderness for him, which goes so far as to suffer him to break your china, provided he will condescend to eat out of your hand, to render you unjust towards us. Where is the proof that we have ever eaten any of his children? or do we and his species ever approach each other? Always keeping upon the roofs of the houses at a distance from us, do they not manifest a distrust of us at which we have just reason to be offended? Let the whole wood-yard be examined next spring, and if any traces of murder be discovered, we will be among the most forward in endeavoring to detect the malefactors, and give them up to justice. But the pigeons are not like us poor humble cats, confined to the soil where we were born; they can fly in the air to another country: those whom you miss, jealous no doubt of the preference shown by you to some over the rest, have taken their flight in search of equality to some *republican dovecote*, rather than drag on a painful existence under the insolent tyranny of your favorite *Coco*.

The accusation brought against us with regard to the canary-birds, you must see yourself is wholly absurd, and a gross imposture. The intervals in the lattice of your aviary are so narrow, that when sometimes we have in sport endeavored to thrust a paw through them, it was not without the utmost difficulty that we could withdraw it again. It is true, that we sometimes amuse ourselves with watching the little innocent sports of these pretty creatures, but we cannot reproach ourselves with having ever shed a drop of their blood.

We shall not endeavor to defend ourselves equally from devouring as many sparrows, blackbirds, and thrushes, as we can possibly catch. But here we have to plead in extenuation, that our most cruel enemies, your Abbés themselves, are incessantly complaining of the ravages made by these birds among the cherries and other fruit. The Sieur Abbé Morellet, in particular, is always thundering the most violent anathemas against the blackbirds and thrushes, for plundering your vines, which they do with as little mercy as he himself. To us, however, most illustrious lady, it appears, that the grapes may just as well be eaten by *blackbirds* as by *Abbés*, and that our warfare against the winged plunderers will be fruitless, if you encourage other biped and featherless pilferers, who make ten times more havoc.

We know that we are also accused of eating nightingales, who never plunder, and sing, as they say, most enchantingly. It is indeed possible that we may now and then have gratified our palates with a delicious morsel in this way, but we can assure you that it was in utter ignorance of your affection for the species; and that, resembling sparrows in their plumage, we, who make no pretensions to being connoisseurs in music, could not distinguish the song of the one from that of the other, and therefore supposed ourselves regaling only on sparrows. A cat belonging to M. Piccini[2] has assured us, that they who only know how to *mew*, cannot be any judges of the art of singing; and on this we rest for our justification. However, we will henceforward exert our utmost endeavors to distinguish the *Gluckists*,[3] who are, as we are informed, the sparrows, from the *Piccinists*, who are the nightingales. We only intreat of you to pardon the inadvertence into which we may

---

[1] A favorite tame pigeon of Madame Helvetius, to which she had given that name.

[2] An Italian composer.

[3] The admirers of *Gluck*, a German composer.

possibly fall, if, in roving after nests, we may sometimes fall upon a brood of *Piscinists*, who, being then destitute of plumage, and not having learnt to sing, will have no mark by which to distinguish them.

The last imputation we are called upon to repel, most illustrious lady, is that of suffering your house to be infested with such a quantity of mice. They make terrible havoc, it is said, with your sugar and sweetmeats; they gnaw the books of your *savans*, and even nibble the slippers of Mademoiselle Luillier,[1] as she is walking. It is urged, that cats being created by Providence, (who watches with equal goodness over all his creatures) for no other purpose but to eat mice, deserve nothing better, when they fail in the object of their vocation, but to be drowned.

Certainly, most illustrious lady, it is easy to discover in this language, the influence of personal interest in the mouths of our accusers. The Sieur Cabanis,[2] who makes an enormous consumption of sweetmeats in your house, and who is always ready to steal a lump of sugar when he thinks he can do it unobserved, has certainly very good reasons for making you consider the *gourmandise* of a few mice, who nibble a loaf of sugar, or begin eating a pot of jelly before him, as a capital crime; but he shews a mind still more atrocious than interested, when he would condemn us as meriting death because we do not prevent the little animals availing themselves, to the best of their power, of a system of spoliation which he himself, great as he is, practises every day without discretion and without remorse. Could he carry his barbarity towards us further, if we were, like the mice and himself, *sugariverous* and *sweetmeativorous* animals? Is it not manifest, that *gourmandise* alone inspires him with sentiments so cruel, and can you give them admission into your bosom?

With regard to the books of the Abbé de la Roche, and that other *savant*,[3] whose speech at the Academy we just now read as it wrapped up a calf's lights which you had the goodness to give us; with regard to their books, we ask, where is the great harm if they are sometimes gnawed a little by the mice? Of what use to them is all their reading? Since they have lived with you, must they not be fully convinced of the inutility of all knowledge? They see you good without the assistance of *Treatises upon Morals;* charming in your manners without having read our historiographer Moncrief's *Art of Pleasing;* and happy without being acquainted with the *Treatise on Happiness*, by the unfortunate Maupertuis. While they are the daily witnesses of your profound ignorance, they, who know so many things, are wholly unacquainted with the art you know so well—of being able to dispense with knowing any thing. Your orthography is not much better than ours, and your writing is very like the scratching of a cat's paw. You totally mistake the way to spell *happiness*, but you enjoy the thing without knowing how it should be written; that happiness, in short, which they cannot draw from their books, you shed around them from the eminence of your ignorance. The mice cannot, therefore, as we have proved, do them any great injury. As to the slippers of Mademoiselle Luillier, if she would only creep on at a somewhat less drawling pace, the mice would not be able to get at them; and it is strange that you would condemn us to death because your waiting-maid moves only a snail's pace.

---

[1] An old waiting-maid of Madame Helvetius.

[2] A friend of Madame Helvetius, who lived in her house.

[3] The Abbé Morellet.

But these reasons, strong as they are, are not the only ones which may excuse us towards you for the spoliations committed in your house by the mice. Ah! most illustrious lady, with what conscience can we be reproached for not catching them, when you have constantly about you two large dogs thirsting for our blood, who will not permit us to approach your beloved person, as duty and gratitude would lead us to do? Two dogs! this is saying enough: they are animals brought up in the utmost hatred of our species; their barking always fills us with terror. How can any one be so unjust as to reproach us with keeping at a distance from places where animals thus ferocious, whom nature has inspired with such aversion to us, and such power to destroy us, reign uncontrolled? Nay, farther, if the question were only of French dogs, there might be hopes that their hatred would not be so active, that their ferocity would not be so alarming; but you must needs take into your service (in contempt of the wise decrees of the comptroller-general) a *bull-dog* which you have imported from England, who hates us doubly; in the first place, as *cats*, and still more ardently as *French cats*. We see daily before our eyes, the cruel effects of his rage in the shortened tail of our brother *Le Noir*. Our zeal to serve you, united with the natural taste we have for mice, would lead us to form hunting-parties in your apartments, if we were not banished by these formidable enemies whom you have made masters of them. Let us no longer, therefore, be reproached with the disorders committed against you by the mice, since we are deprived of the possibility of repressing them.

Alas! those happy times are no more, when that illustrious cat *Pompon* reigned in these places, slept on your lap, and reposed upon your couch! when that *Zemire*,[1] who now so eagerly endeavors to procure our downfal, humbly paid his court to the favorite whose situation he now occupies. Then could we parade about the house with our tails in the air: the late M. Pompon would sometimes condescend to share with us the rabbits graciously sent him by his majesty from his shooting-parties; and under the protection of this illustrious favorite we enjoyed peace and happiness. Those happy times, we must repeat, are, alas! no more: we live under the reign of a DOG: sunk in deep and lasting regrets for the CAT, beneath whose empire such enjoyments were ours, while our only consolation is to go every night, and water with our tears the cypress which shadows his tomb!

Ah, most illustrious lady! let the memory of the cat you so much loved, inspire you at least with some compassion towards us. We are not indeed of his race, since he was devoted to *chastity* from his youth; but we are of his species. His manes, still wandering about this spot, call upon you to revoke the sanguinary order which menaces our days; and all those which you preserve to us shall be consecrated to mewing forth our lasting gratitude, while the beneficent act shall be handed down by us to our children, and to our children's children.

---

[1] A little dog.

A Monsieur l'Abbe' de la Roche, a Auteuil.

J'ai parcouru, mon cher ami, le petit livre de poésies de M. Helvétius, dont vous m'avez fait cadeau. Le poëme sur *le Bonheur* m'a donné beaucoup de plaisir, et m'a fait ressouvenir d'une petite chanson à boire, que j'ai fait il y a quarante ans sur le même sujet, et qui avoit à-peu-près le même plan, et plusieurs des mêmes pensées, mais bien densement exprimées. La voici.

Singer.

Fair Venus calls, her voice obey,
In beauty's arms spend night and day.
The joys of love, all joys excel,
And loving's certainly doing well.

Chorus.

Oh! no!
Not so!
For honest souls know,
Friends and a bottle still bear the bell.

Singer.

Then let us get money, like bees lay up honey;
We'll build us new hives, and store each cell.
The sight of our treasure shall yield us great pleasure;
We'll count it, and chink it, and jingle it well.

Chorus.

Oh! no!
Not so!
For honest souls know,
Friends and a bottle still bear the bell.

Singer.

If this does not fit ye, let's govern the city,
In power is pleasure no tongue can tell;
By crowds tho' you're teas'd, your pride shall be plea's'd,
And this can make Lucifer happy in hell!

Chorus.

Oh! no!
Not so!
For honest souls know,
Friends and a bottle still bear the bell.

Singer.

Then toss off your glasses, and scorn the dull asses,
Who, missing the kernel, still gnaw the shell;
What's love, rule, or riches? wise Solomon teaches,
They're vanity, vanity, vanity, still.

Chorus.

That's true;
He knew;
He'd tried them all through;
Friends and a bottle still bore the bell.

C'est un chanteur, mon cher Abbé, qui exhorte ses compagnons de chercher *le bonheur* dans *l'amour*, dans les *richesses*, et dans *le pouvoir*. Ils répliquent, chantant ensemble, que *le bonheur* ne se trouve pas en aucunes de ces choses, et qu'on ne le trouve que dans *les amis* et *le vin*. A cette position, le chanteur enfin consente. La phrase "*bear the bell*," signifie en François, *remporter le prix*.

J'ai souvent remarqué, en lisant les ouvrages de M. Helvétius, que quoique nous étions nés et élevés dans deux pays si éloignés l'un de l'autre; nous nous sommes rencontrés souvent dans les mêmes pensées; et c'est une réflexion bien flatteuse pour moi, que nous avons aimé les mêmes études, et autant que nous les avions connus, les mêmes amis,[1] *et la même femme*.[2]

Adieu! mon cher ami, &c. B. F.

[*Translation.*]

To the Abbe de La Roche, at Auteuil.

I have run over, my dear friend, the little book of poetry by M. Helvetius, with which you presented me. The poem on *Happiness* pleased me much, and brought to my recollection a little drinking song which I wrote forty years ago upon the same subject, and which is nearly on the same plan, with many of the same thoughts, but very concisely expressed. It is as follows:—

Singer.

Fair Venus calls, &c.

'Tis a singer, my dear Abbé, who exhorts his companions to seek *happiness* in *love*, in *riches*, and in *power*. They reply, singing together, that happiness is not to be found in any of these things;

[1] Mess. Voltaire, Hume, Turgot, Marmontel, d'Holbach, Le Roy; les Abbés Morellet et La Roche, &c. &c.

[2] Madame Helvétius.

that it is only to be found in *friends* and *wine*. To this proposition the singer at length assents. The phrase "*bear the bell*," answers to the French expression, "*obtain the prize*."

I have often remarked, in reading the works of M. Helvetius, that although we were born and educated in two countries so remote from each other, we have often been inspired with the same thoughts; and it is a reflection very flattering to me, that we have not only loved the same studies, but, as far as we have mutually known them, the same friends,[1] and *the same woman*.[2]

Adieu! my dear friend, &c. B. F.

A MONSIEUR L'ABBÉ MORELLET.

Passy, le ****.

Vous m'avez souvent égayé, mon très-cher ami, pas vos excellentes chansons à boire; en échange, je désire vous édifier par quelques réflexions chrétiennes, morales, et philosophiques, sur le même sujet.

In vino veritas, dit le sage. *La vérité est dans le vin.* Avant Noé donc, les hommes n'ayant que de l'eau à boire, ne pouvoient trouver la vérité. Ainsi ils s'égarèrent, ils devinrent abominablement méchants, et ils furent justement exterminés par *l'eau*, qu'ils aimoient à boire.

Ce bon-homme Noé ayant vu que par cette mauvaise boisson tous ses contemporains avoient péri, le prit en aversion; et Dieu, pour le désaltérer, créa la vigne, et lui révéla l'art d'en faire du vin. Par l'aide de cette liqueur il découvrit maintes et maintes vérités: et depuis son temps, le mot "di*vin*er" a été en usage; signifiant originairement *découvrir par le moyen du* VIN. Ainsi le patriarche Joseph prétendoit di*vin*er au moyen d'une coupe, ou verre de VIN;[3] liqueur qui a reçu ce nom pour marquer qu'elle n'étoit pas une invention humaine, mais di*vine*: (autre preuve de l'antiquité de la langue Françoise, contre M. Gibelin).[4] Aussi depuis ce temps, toutes les choses excellentes, même les Déités, ont été appelées di*vines* ou di*vinités*.

---

[1] Messrs. Voltaire, Hume, Turgot, Marmontel, d'Holbach, Le Roy, the Abbés Morellet and La Roche, &c. &c.

[2] Madame Helvetius.

[3] L'orateur Romain, qui est bien connu par ses mauvaises poësies, d'être *un buveur d'eau*, confesse franchement, dans son livre *De* DIVINATIONE, qu'il ne savoit pas *diviner*.—*Quid futurum sit non* DIVINO.

[4] Author of "*Le Monde primitif comparé au Monde moderne.*"

On parle de la conversion de l'eau en vin, à la nôce de Cana, comme d'un miracle. Mais cette conversion est faite tous les jours par la bonté de Dieu, sous nos yeux. Voilà l'eau qui tombe des cieux sur nos vignobles, et alors elle entre dans les racines des vignes pourêtre changée en vin. Preuve constante que Dieu nous aime, et qu'il aime à nous voir heureux. Le miracle particulier a été fait seulement pour hâter l'opération dans une circonstance de besoin soudain, qui le demandoit.

Il est vrai que Dieu a aussi instruit les hommes à réduire le vin en eau. Mais quelle espèce d'eau? C'est *l'eau*-de-vie. Et cela afin que par-là ils puissent, au besoin, faire le miracle de Cana, et convertir l'eau ordinaire en cette espèce excellente de vin, qu'on appelle *ponche!*

Mon frère Chrétien, soyez bienveillant et bienfaisant comme lui, et ne gâtez pas son bon ouvrage. Il a fait le vin pour nous réjouir:—quand vous voyez votre voisin à table verser du vin dans son verre, ne vous hâtez pas à y verser de l'eau. Pourquoi voulez-vous noyer la *vérité?* Il est vraisemblable que votre voisin sait mieux que vous ce que lui convient. Peut-être il n'aime pas l'eau; peut-être il ne veut mettre que quelques gouttes, par complaisance pour la mode; peut-être il ne veut pas qu'un autre observe combien peu il en met dans son verre. Donc, n'offrez l'eau qu'aux enfans; c'est une fausse politesse, et bien incommode. Je vous dis ceci comme homme du monde; et je finirai, comme j'ai commencé, en bon Chrétien, en vous faisant une observation religieuse bien importante, et tirée de l'Ecriture Sainte; savoir, que l'apôtre Paul conseilloit bien sérieusement à Timothée, de mettre du vin dans son eau pour la santé; mais que pas un des apôtres, ni aucuns des saints pères, n'ont jamais conseillé de mettre *de l'eau dans le vin!*

B. F.

P.S.—Pour vous confirmer encore plus dans votre piété et reconnoissance à la Providence Divine, réfléchissez sur la situation qu'elle a donnée au *coude*. Vous voyez aussi que les animaux qui doivent boire l'eau qui coule sur la terre, s'ils ont des jambes longues ils ont aussi un cou long, afin qu'ils puissent atteindre leur boisson sans la peine de se mettre à genoux. Mais l'homme, qui étoit destiné à boire du vin, doit être en état de porter le verre à sa bouche. Si le coude avoit été placé plus près de la main, la partie d'avant auroit été trop courte pour approcher le verre à la bouche;

et s'il avoit été placé plus près l'épaule, la partie seroit si longue qu'il porteroit le verre au-delà de la tête. Ainsi nous aurions été *tantalisés*. Mais par la présente situation du coude nous sommes en état de boire à notre aise; le verre venant justement à la bouche.—Adorons donc, le verre à la main, cette sagesse bienveillante! Adorons, et buvons! B. F.

[*Translation.*]

To the Abbe Morellet.

Passy, * * *

You have often enlivened me, my dear friend, by your excellent drinking songs; in return, I beg to edify you by some Christian, moral, and philosophical reflections upon the same subject.

In vino veritas, says the wise man,—*Truth is in wine.* Before the days of Noah, then, men having nothing but water to drink, could not discover the truth. Thus they went astray, became abominably wicked, and were justly exterminated by *water*, which they loved to drink.

The good man Noah, seeing that through this pernicious beverage all his cotemporaries had perished, took it in aversion; and to quench his thirst, God created the vine, and revealed to him the means of converting its fruit into wine. By means of this liquor he discovered numberless important truths; so that ever since his time the word *to divine* has been in common use, signifying originally *to discover by means of* WINE. Thus the patriarch Joseph took upon himself to *divine* by means of a cup or glass of WINE;[1] a liquor which obtained this name to show that it was not of human but *divine* invention (another proof of the *antiquity* of the French language, in opposition to M. Gibelin): nay, since that time all things of peculiar excellence, even the deities themselves, have been called *Divine* or Divinities.

We hear of the conversion of water into wine at the marriage in Cana, as of a miracle. But this conversion is, through the goodness of God, made every day before our eyes. Behold the rain which descends from heaven upon our vineyards, and which incorporates itself with the grapes to be changed into wine; a constant proof that God loves us, and loves to see us happy! The miracle in question was only performed to hasten the operation under circumstances of present necessity, which required it.

It is true that God has also instructed man to reduce wine into water. But into what sort of water?—*Water of Life.*[2] And this, that man may be able upon occasion to perform the miracle of Cana, and convert common water into that excellent species of wine which we call *punch*.

My Christian brother, be kind and benevolent like God, and do not spoil his good work. He made wine to gladden the heart of man;—do not, therefore, when at table you see your neighbor

---

[1] The Roman orator, who is well known by his bad poetry to have been *a water drinker*, frankly acknowledges in his book *De Divinatione*, that he did not know how *to divine*. *Quid futurum sit non divino.*

[2] *Eau-de-vie*, that is, brandy.

pour wine into his glass be eager to mingle water with it. Why would you drown *truth?* It is probable that your neighbor knows better than you can what suits him. Perhaps he does not like water; perhaps he would only put in a few drops for fashion's sake; perhaps he does not wish any one to observe how much he puts in his glass. Do not then offer water except to children,—'tis a mistaken piece of politeness, and often very inconvenient. I give you this hint as a man of the world; and I will finish as I began, like a good Christian, in making a religious observation of high importance, taken from the Holy Scriptures; I mean, that the apostle Paul counselled Timothy very seriously to put wine into his water for the sake of his health; but that not one of the apostles or holy fathers ever recommended *putting water to wine.* B. F.

P. S. To confirm still more your piety and gratitude to Divine Providence, reflect upon the situation which it has given to the *elbow.* You see in animals who are intended to drink the waters that flow upon the earth, that if they have long legs they have also a long neck, so that they can get at their drink without kneeling down. But man, who was destined to drink wine, is framed in a manner that he may raise the glass to his mouth. If the elbow had been placed nearer the hand, the part in advance would have been too short to bring the glass up to the mouth; and if it had been nearer the shoulder, that part would have been so long that when it attempted to carry the wine to the mouth it would have overshot the mark and gone beyond the head; thus, either way, we should have been in the case of Tantalus. But from the actual situation of the elbow we are enabled to drink at our ease, the glass going directly to the mouth. Let us, then, with glass in hand, adore this benevolent wisdom—let us adore and drink.

AN ECONOMICAL PROJECT.

To the Authors of the Journal of Paris.

Messieurs,

You often entertain us with accounts of new discoveries. Permit me to communicate to the public, through your paper, one that has lately been made by myself, and which I conceive may be of great utility.

I was the other evening in a grand company, where the new lamp of Messrs. Quinquet and Lange was introduced, and much admired for its splendor; but a general inquiry was made, whether the oil it consumed was not in proportion to the light it afforded, in which case there would be no saving in the use of it. No one present could satisfy us in that point, which all agreed ought to be known, it being a very desirable thing to lessen, if possible, the expense of lighting our apartments, when every other article of family expense was so much augmented.

I was pleased to see this general concern for economy, for I love economy exceedingly.

I went home, and to bed, three or four hours after midnight, with my head full of the subject. An accidental sudden noise waked me about six in the morning, when I was surprised to find my room filled with light; and I imagined at first, that a number of those lamps had been brought into it: but, rubbing my eyes, I perceived the light came in at the windows. I got up and looked out to see what might be the occasion of it, when I saw the sun just rising above the horizon, from whence he poured his rays plentifully into my chamber, my domestic having negligently omitted, the preceding evening, to close the shutters.

I looked at my watch, which goes very well, and found that it was but six o'clock; and still thinking it something extraordinary that the sun should rise so early, I looked into the almanack, where I found it to be the hour given for his rising on that day. I looked forward too, and found he was to rise still earlier every day till towards the end of June; and that at no time in the year he retarded his rising so long as till eight o'clock. Your readers, who with me have never seen any signs of sun-shine before noon, and seldom regard the astronomical part of the almanack, will be as much astonished as I was, when they hear of his rising so early; and especially when I assure them, *that he gives light as soon as he rises.* I am convinced of this. I am certain of my fact. One cannot be more certain of any fact. I saw it with my own eyes. And, having repeated this observation the three following mornings, I found always precisely the same result.

Yet so it happens, that when I speak of this discovery to others, I can easily perceive by their countenances, though they forbear expressing it in words, that they do not quite believe me. One, indeed, who is a learned natural philosopher, has assured me that I must certainly be mistaken as to the circumstance of the light coming into my room; for it being well known, as he says, that there could be no light abroad at that hour, it follows that none could enter from without; and that of consequence, my windows being accidentally left open, instead of letting in the light, had only served to let out the darkness: and he used many ingenious arguments to show me how I might, by that means, have been deceived. I own that he puzzled me a little, but he did not satisfy me; and the subsequent observations I made, as above mentioned, confirmed me in my first opinion.

This event has given rise in my mind to several serious and important reflections. I considered that, if I had not been awakened so early in the

morning, I should have slept six hours longer by the light of the sun, and in exchange have lived six hours the following night by candle-light; and the latter being a much more expensive light than the former, my love of economy induced me to muster up what little arithmetic I was master of, and to make some calculations, which I shall give you, after observing that utility is, in my opinion, the test of value in matters of invention, and that a discovery which can be applied to no use, or is not good for something, is good for nothing.

I took for the basis of my calculation the supposition that there are 100,000 families in Paris, and that these families consume in the night half a pound of bougies, or candles, per hour. I think this is a moderate allowance, taking one family with another; for though I believe some consume less, I know that many consume a great deal more. Then estimating seven hours per day as the medium quantity between the time of the sun's rising and ours, he rising during the six following months from six to eight hours before noon, and there being seven hours of course per night in which we burn candles, the account will stand thus:—

In the six months between the 20th of March and the 20th of September, there are

Nights	183
Hours of each night in which we burn candles	7
Multiplication gives for the total number of hours . . .	1,281
These 1,281 hours multiplied by 100,000, the number of inhabitants, give	128,100,000
One hundred twenty-eight millions and one hundred thousand hours, spent at Paris by candle-light, which, at half a pound of wax and tallow per hour, gives the weight of	64,050,000
Sixty-four millions and fifty thousand of pounds, which, estimating the whole at the medium price of thirty sols the pound, makes the sum of ninety-six millions and seventy-five thousand livres tournois	96,075,000

An immense sum! that the city of Paris might save every year, by the economy of using sun-shine instead of candles.

If it should be said, that people are apt to be obstinately attached to old customs, and that it will be difficult to induce them to rise before noon, consequently my discovery can be of little use: I answer, *Nil desperandum*. I

believe all who have common sense, as soon as they have learnt from this paper that it is day-light when the sun rises, will contrive to rise with him; and, to compel the rest, I would propose the following regulations:

First. Let a tax be laid of a louis per window, on every window that is provided with shutters to keep out the light of the sun.

Second. Let the same salutary operation of police be made use of to prevent our burning candles, that inclined us last winter to be more economical in burning wood; that is, let guards be placed in the shops of the wax and tallow chandlers, and no family be permitted to be supplied with more than one pound of candles per week.

Third. Let guards also be posted to stop all the coaches, &c. that would pass the streets after sun-set, except those of physicians, surgeons, and midwives.

Fourth. Every morning, as soon as the sun rises, let all the bells in every church be set ringing; and if that is not sufficient, let cannon be fired in every street, to wake the sluggards effectually, and make them open their eyes to see their true interest.

All the difficulty will be in the first two or three days: after which the reformation will be as natural and easy as the present irregularity; for, *ce n'est que le premier pas qui coûte.* Oblige a man to rise at four in the morning, and it is more than probable he will go willingly to bed at eight in the evening; and, having had eight hours sleep, he will rise more willingly at four the morning following. But this sum of ninety-six millions and seventy-five thousand livres, is not the whole of what may be saved by my economical project. You may observe, that I have calculated upon only one-half of the year, and much may be saved in the other, though the days are shorter. Besides, the immense stock of wax and tallow left unconsumed during the summer, will probably make candles much cheaper for the ensuing winter, and continue them cheaper as long as the proposed reformation shall be supported.

For the great benefit of this discovery, thus freely communicated and bestowed by me on the public, I demand neither place, pension, exclusive privilege, nor any other reward whatever. I expect only to have the honor of it. And yet I know there are little envious minds who will, as usual, deny me this, and say, that my invention was known to the ancients, and perhaps they may bring passages out of the old books in proof of it. I will not dispute with these people, that the ancients knew not the sun would rise at certain hours;

they possibly had, as we have, almanacks that predicted it: but it does not follow thence, that they knew *he gave light as soon as he rose.* This is what I claim as my discovery. If the ancients knew it, it might have been long since forgotten, for it certainly was unknown to the moderns, at least to the Parisians, which to prove, I need use but one plain simple argument. They are as well instructed, judicious, and prudent a people as exist any where in the world, all professing, like myself, to be lovers of economy; and, from the many heavy taxes required from them by the necessities of the state, have surely an abundant reason to be economical. I say it is impossible that so sensible a people, under such circumstances, should have lived so long by the smoky, unwholesome, and enormously expensive light of candles, if they had really known, that they might have had as much pure light of the sun for nothing. I am, &c.

A SUBSCRIBER.

END OF PART III.

PART IV.

PHILOSOPHICAL SUBJECTS.

DESCRIPTION OF A NEW MUSICAL INSTRUMENT COMPOSED OF GLASSES, CALLED THE ARMONICA.[1]

TO THE REV. FATHER BECCARIA.

REV. SIR, *London, July* 13, 1762.

I ONCE promised myself the pleasure of seeing you at Turin; but as that is not now likely to happen, being just about returning to my native country, America, I sit down to take leave of you (among others of my European friends that I cannot see) by writing.

I thank you for the honorable mention you have so frequently made of me in your letters to Mr. Collinson and others, for the generous defence you undertook and executed with so much success, of my electrical opinions; and for the valuable present you made me of your new work, from which I have received great information and pleasure. I wish I could in return entertain you with any thing new of mine on that subject; but I have not lately pursued it. Nor do I know of any one here that is at present much engaged in it.

Perhaps, however, it may be agreeable to you, as you live in a musical country, to have an account of the new instrument lately added here to the great number that charming science was before possessed of.—As it is an instrument that seems peculiarly adapted to Italian music, especially that of the soft and plaintive kind, I will endeavor to give you such a description of it, and of the manner of constructing it, that you or any of your friends may be

[1] See Plate 1.

enabled to imitate it, if you incline so to do, without being at the expense and trouble of the many experiments I have made in endeavoring to bring it to its present perfection.

You have doubtless heard the sweet tone that is drawn from a drinking-glass, by passing a wet finger round its brim. One Mr. Puckeridge, a gentleman from Ireland, was the first who thought of playing tunes, formed of these tones. He collected a number of glasses of different sizes, fixed them near each other on a table, and tuned them by putting into them water, more or less, as each note required. The tones were brought out by passing his fingers round their brims. He was unfortunately burned here, with his instrument, in a fire which consumed the house he lived in. Mr. E. Delaval, a most ingenious member of our Royal Society, made one in imitation of it, with a better choice and form of glasses, which was the first I saw or heard. Being charmed with the sweetness of its tones, and the music he produced from it, I wished only to see the glasses disposed in a more convenient form, and brought together in a narrower compass, so as to admit of a greater number of tones, and all within reach of hand to a person sitting before the instrument, which I accomplished, after various intermediate trials, and less commodious forms, both of glasses and construction, in the following manner.

The glasses are blown as near as possible in the form of hemispheres, having each an open neck or socket in the middle.[1] The thickness of the glass near the brim about a tenth of an inch, or hardly quite so much, but thicker as it comes nearer the neck, which in the largest glasses is about an inch deep, and an inch and half wide within, these dimensions lessening as the glasses themselves diminish in size, except that the neck of the smallest ought not to be shorter than half an inch. The largest glass is nine inches diameter, and the smallest three inches. Between these three are twenty-three different sizes, differing from each other a quarter of an inch in diameter. To make a single instrument there should be at least six glasses blown of each size; and out of this number one may probably pick thirty-seven glasses (which are sufficient for three octaves with all the semitones) that will be each either the note one wants or a little sharper than that note, and all fitting so well into each other as to taper pretty regularly from the largest to the smallest. It is true there are not thirty-seven sizes; but it often happens that two of the same size differ a

[1] See Plate 1.—A.

note or half note in tone, by reason of a difference in thickness, and these may be placed one in the other without sensibly hurting the regularity of the taper form.

The glasses being chosen, and every one marked with a diamond the note you intend it for, they are to be tuned by diminishing the thickness of those that are too sharp. This is done by grinding them round from the neck towards the brim, the breadth of one or two inches, as may be required; often trying the glass by a well-tuned harpsicord, comparing the tone drawn from the glass by your finger, with the note you want, as sounded by that string of the harpsichord. When you come nearer the matter, be careful to wipe the glass clean and dry before each trial, because the tone is something flatter when the glass is wet, than it will be when dry;—and grinding a very little between each trial, you will thereby tune to great exactness. The more care is necessary in this, because if you go below your required tone, there is no sharpening it again but by grinding somewhat off the brim, which will afterwards require polishing, and thus increase the trouble.

The glasses being thus tuned, you are to be provided with a case for them, and a spindle on which they are to be fixed. My case is about three feet long, eleven inches every way wide within at the biggest end, and five inches at the smallest end; for it tapers all the way, to adapt it better to the conical figure of the set of glasses. This case opens in the middle of its height, and the upper part turns up by hinges fixed behind. The spindle, which is of hard iron, lies horizontally from end to end of the box within, exactly in the middle, and is made to turn on brass gudgeons at each end. It is round, an inch diameter at the thickest end, and tapering to a quarter of an inch at the smallest.—A square shank comes from its thickest end through the box, on which shank a wheel is fixed by a screw. This wheel serves as a fly to make the motion equable, when the spindle, with the glasses, is turned by the foot like a spinning-wheel. My wheel is of mahogany, eighteen inches diameter, and pretty thick, so as to conceal near its circumference about 25lb. of lead.—An ivory pin is fixed in the face of this wheel, and about four inches from the axis. Over the neck of this pin is put the loop of the string that comes up from the moveable step to give it motion. The case stands on a neat frame with four legs.

To fix the glasses on the spindle, a cork is first to be fitted in each neck pretty tight, and projecting a little without the neck, that the neck of one may not touch the inside of another when put together, for that would make a

jarring.—These corks are to be perforated with holes of different diameters, so as to suit that part of the spindle on which they are to be fixed. When a glass is put on, by holding it stiffly between both hands, while another turns the spindle, it may be gradually brought to its place. But care must be taken that the hole be not too small, lest, in forcing it up, the neck should split; nor too large, lest the glass not being firmly fixed should turn or move on the spindle, so as to touch and jar against its neighboring glass. The glasses thus are placed one in another, the largest on the biggest end of the spindle which is to the left hand; the neck of this glass is towards the wheel, and the next goes into it in the same position, only about an inch of its brim appearing beyond the rim of the first: thus proceeding, every glass when fixed shows about an inch of its brim (or three quarters of an inch, or half an inch, as they grow smaller) beyond the brim of the glass that contains it; and it is from these exposed parts of each glass that the tone is drawn, by laying a finger upon one of them as the spindle and glasses turn round.

My largest glass is G, a little below the reach of a common voice, and my highest G, including three complete octaves.—To distinguish the glasses the more readily to the eye, I have painted the apparent parts of the glasses within side, every semitone white, and the other notes of the octave with the seven prismatic colors, viz. C, red; D, orange; E, yellow; F, green; G, blue; A, indigo; B, purple; and C, red again;—so that glasses of the same color (the white excepted) are always octaves to each other.

This instrument is played upon, by sitting before the middle of the set of glasses as before the keys of a harpsichord, turning them with the foot, and wetting them now and then with a sponge and clean water. The fingers should be first a little soaked in water, and quite free from all greasiness; a little fine chalk upon them is sometimes useful, to make them catch the glass and bring out the tone more readily. Both hands are used, by which means different parts are played together.—Observe, that the tones are best drawn out when the glasses turn *from* the ends of the fingers, not when they turn *to* them.

The advantages of this instrument are, that its tones are incomparably sweet beyond those of any other; that they may be swelled and softened at pleasure by stronger or weaker pressures of the finger, and continued to any length; and that the instrument, being once well tuned, never again wants tuning.

In honor of your musical language, I have borrowed from it the name of this instrument, calling it the Armonica.

With great esteem and respect, I am, &c.

B. FRANKLIN.

ANSWER TO SOME QUERIES OF MONSIEUR DUBOURG RESPECTING THE ARMONICA.

London, Dec. 8, 1772.

WHEN the glasses are ranged on the horizontal spindle, or, to make use of your expression, *enfilés*, and that each one is definitely fixed in its place,—the whole of the largest glass appears, at the extremity to the left;[1] the following one, nearly enclosed in the preceding one, shows only about an inch of its border, which advances so much further than the edge of the larger glass;—and so, in succession, each glass exceeds the one containing it, leaving by this placement an uncovered border on which the fingers may be applied. The glasses do not touch one another, but they are so near as not to admit a finger to pass between them; so that the interior border is not susceptible of being rubbed.

The finger is to be applied flat on the borders of the largest glasses, and on the borders of the smaller; but in part on the borders, and in part on the edges, of the glasses of an intermediate size. Nothing but experience can instruct with respect to this manutation, *(fingering,)* because the different-sized glasses require to be touched differently—some nearer the edge, and others farther from it. A few hours' exercise will teach this. B. F.

ON FIRE.

Craven Street, 1762.

DID you ever see people at work with spades and pickaxes, digging a cellar? When they have loosened the earth perhaps a foot deep, that loose earth must be carried off, or they can go no deeper; it is in their way, and hinders the operation of the instruments.

When the first foot of earth is removed, they can dig and loosen the earth a

[1] See Plate 1.—B.

foot deeper.—But if those who remove the earth should with it take away the spades and pickaxes, the work will be equally obstructed as if they had left the loose earth unremoved.

I imagine the operation of fire upon fuel with the assistance of air may be in some degree similar to this. Fire penetrates bodies, and separates their parts; the air receives and carries off the parts separated, which if not carried off would impede the action of the fire. With this assistance therefore of a moderate current of air, the separation increases, but too violent a blast carries off the fire itself; and thus any fire may be blown out, as a candle by the breath, if the blast be proportionable.

But if air contributed inflammatory matter, as some have thought, then it should seem, that the more air the more the flame would be augmented, which beyond certain bounds does not agree with the fact.

Some substances take fire, i. e. are kindled by the application of fire much sooner than others. This is in proportion as they are good or bad conductors of fire, and as their parts cohere with less or more strength. A bad conductor of fire not easily permitting it to penetrate and be absorbed, and its force divided among the whole substance, its operation is so much the stronger on the surface to which it is applied, and is in a small depth of surface strong enough to produce the separation of parts which we call *burning*. All oils and fats, wax, sulphur, and most vegetable substances, are bad conductors of fire. The oil of a lamp, burning at the top, may be scarce warm at the bottom; a candle or a stick of wood inflamed at one end, is cool at the other. Metals, which are better conductors, are not so easily kindled, though, when sufficient fire is applied to them to separate their parts, they will all burn. But the fire applied to their surfaces enters more easily, is absorbed and divided; and not enough left on the surface to overcome the cohesion of their parts. A close contact with metals will for the same reason prevent the burning of more inflammable substances. A flaxen thread, bound close round an iron poker, will not burn in the flame of a candle; for it must imbibe a certain quantity of fire before it can burn, i. e. before its parts can separate: but the poker, as fast as the fire arrives, takes it from the thread, conducts it away, and divides it in its own substance.

Common fire I conceive to be collected by friction from the common mass of that fluid, in the same manner as the electrical fluid is collected by friction, which I have endeavored to explain in some of my electrical papers, and, to

avoid length in this letter, refer you to them. In wheels the particles of grease and oil acting as so many little rollers, and preventing friction between the wood and wood, do thereby prevent the collection of fire.

CONJECTURES ON THE NATURE OF FIRE.

[*For the consideration of my dear Friend, David Rittenhause, Esq.*]

Universal space, as far as we know of it, seems to be filled with a subtil fluid, whose motion, or vibration, is called light.

This fluid may possibly be the same with that which, being attracted by and entering into another more solid matter, dilates the substance by separating the constituent particles, and so rendering some solid fluid, and maintaining the fluidity of others; of which fluid when our bodies are totally deprived, they are said to be frozen, when they have a proper quantity, they are in health and fit to perform all their functions; it is then called natural heat; when too much, it is fever; and when forced into the body in too great a proportion from without, it gives pain by separating and destroying the flesh, and is then called burning, and the fluid so entering and acting is called fire.

While organised bodies, animal or vegetable, are augmenting in growth, or are supplying their continual waste, is not this done by attracting and consolidating this fluid called fire, so as to form of it a part of their substance? and is it not a separation of the parts of such substance, which, dissolving its solid state, sets that subtil fluid at liberty, when it again makes its appearance as fire?

For the power of man relative to matter, seems limited to the dividing or to mixing the various kinds of it, or changing its form and appearance, by different compositions of it, but does not extend to the making or creating of new matter, or annihilating the old. Thus if fire be an original element or kind of matter, it is fixed and permanent in the universe; we cannot destroy any of it, or make addition to it, we can only separate it from that which confines it, and so set it at liberty, as when we put wood in a situation to be burnt, or transfer it from one solid to another; as when we make lime by burning stone, a part of the fire dislodged from the wood being left in the stone.

May not this fluid when at liberty be capable of penetrating and entering into all bodies, organised or not; quitting easily in totality those not organised,

and quitting easily in part those which are, the part assumed and fixed remaining till the body is dissolved?

Is it not the fluid which keeps asunder the particles of air, permitting them to approach, or separating them more in proportion as its quantity is diminished or augmented?

Is it not the greater gravity of the particles of air, which forces the particles of this fluid to mount with the matters to which it is attached, as smoke or vapor?

Does it not seem to have a great affinity with water, since it will quit a solid to unite with that fluid, and go off with it in vapor, leaving the solid cold to the touch, and the degree measurable by the thermometer?

The vapor rises attached to this fluid; but at a certain height they separate, and the vapor descends in rain, retaining but little of it; in snow or hail less. What becomes of that fluid? Does it rise above our atmosphere, and mix with the universal mass of the same kind? or does a spherical stratum of it denser, or less mixed with air attracted by this globe and repelled or pushed up only to a certain height from its surface by the greater weight of air, remain there, surrounding the globe, and proceeding with it round the sun?

In such case, as there may be a continuity or communication of this fluid through the air quite down to the earth, is it not by the vibration given to it by the sun that light appears to us? and may it not be, that every one of the infinitely small vibrations, striking common matter with a certain force, enters its substance, is held there by attraction, and augmented by succeeding vibrations, till the matter has received as much as their force can drive into it?

Is it not thus that the surface of this globe is continually heated by such repeated vibrations in the day, and cooled by the escape of the heat when those vibrations are discontinued in the night, or intercepted and reflected by clouds?

Is it not thus that fire is amassed in, and makes the greatest part of, the substance of combustible bodies?

Perhaps when this globe was first formed, and its original particles took their place at certain distances from the centre, in proportion to their greater or less gravity, the fluid fire attracted towards that centre might in great part be obliged, as lightest, to take place above the rest, and thus form the sphere of fire above supposed, which would afterwards be continually diminishing by the substance it afforded to organised bodies, and the quantity restored to it again by the burning or other separating of the parts of those bodies.

Is not the natural heat of animals thus produced, by separating in digestion the parts of food, and setting their fire at liberty?

Is it not this sphere of fire which kindles the wandering globes that sometimes pass through it in our course round the sun, have their surface kindled by it, and burst when their included air is greatly rarefied by the heat on their burning surfaces?

May it not have been from such considerations, that the ancient philosophers supposed a sphere of fire to exist above the air of our atmosphere?

CURIOUS INSTANCE OF THE EFFECT OF OIL ON WATER.

To Dr. Pringle, London.

Sir, *Philadelphia, Dec.* 1, 1762.

During our passage to Madeira, the weather being warm, and the cabin windows constantly open, for the benefit of the air, the candles at night flared and ran very much; which was an inconvenience. At Madeira we got oil to burn, and with a common glass tumbler or beaker, slung in wire, and suspended to the cieling of the cabin, and a little wire hoop for the wick, furnished with corks to float on the oil, I made an Italian lamp, that gave us very good light all over the table.—The glass at bottom contained water to about one third of its height; another third was taken up with oil; the rest was left empty, that the sides of the glass might protect the flame from the wind. There is nothing remarkable in all this; but what follows is particular. At supper, looking on the lamp, I remarked, that though the surface of the oil was perfectly tranquil, and duly preserved its position and distance with regard to the brim of the glass, the water under the oil was in great commotion, rising and falling in irregular waves, which continued during the whole evening. The lamp was kept burning as a watch-light all night, till the oil was spent, and the water only remained. In the morning I observed, that though the motion of the ship continued the same, the water was now quiet, and its surface as tranquil as that of the oil had been the evening before. At night again, when oil was put upon it, the water resumed its irregular motions, rising in high waves almost to the surface of the oil, but without disturbing the smooth level of that surface. And this was repeated every day during the voyage.

Since my arrival in America, I have repeated the experiment frequently thus: I have put a pack-thread round a tumbler, with strings of the same from each side, meeting above it in a knot at about a foot distance from the top of the tumbler. Then putting in as much water as would fill about one third part of the tumbler, I lifted it up by the knot, and swung it to and fro in the air; when the water appeared to keep its place in the tumbler as steadily as if it had been ice. But pouring gently in upon the water about as much oil, and then again swinging it in the air as before, the tranquillity before possessed by the water, was transferred to the surface of the oil, and the water under it was agitated with the same commotions as at sea.

I have shown this experiment to a number of ingenious persons. Those who are but slightly acquainted with the principles of hydrostatics, &c. are apt to fancy immediately that they understand it, and readily attempt to explain it; but their explanations have been different, and to me not very intelligible. Others, more deeply skilled in those principles, seem to wonder at it, and promise to consider it. And I think it is worth considering: for a new appearance, if it cannot be explained by our old principles, may afford us new ones, of use perhaps in explaining some other obscure parts of natural knowledge. I am, &c.

B. FRANKLIN.

ON THE ELECTRICITY OF FOGS.

To THOMAS RONAYNE,—CORK.

London, April 20, 1766.

I received your very obliging and ingenious letter by Captain Kearney. Your observations on the Electricity of Fogs, and of the air in Ireland, and of the several circumstances attending a thunder-storm, are very curious; and I thank you for them. I have endeavored to get Father Beccaria's book for you, but find it is not to be had here: 'tis in 2 vols. 4to. in Italian, printed at Turin. In my opinion no part of the earth is, or can be, in a negative state of electricity naturally; and though an inequality may in some circumstances be occasioned, an equality would soon follow, from the extreme subtilty of the electric fluid, and the good conductors the moist earth is filled with. But yet I think when a highly-charged positive cloud comes near the earth, it repels and drives in-

ward the natural quantity of electricity in the superficial parts, and in buildings, trees, &c. so as to bring them into a real negative state before it strikes. And I think the negative state you often find your balls in that hang to your apparatus, is not occasioned always by negative clouds, but often by positive clouds having passed over it, which, in passing, have repelled and driven out part of the natural quantity of electricity that was in the apparatus; so that when they are passed, the remainder diffusing itself equally in the apparatus, the whole is in a negative state. If you have read my experiments in pursuance of those made by Mr. Canton (they are in vol. 40 of the Transactions), you will easily understand this. But you may readily make some experiments that will show it clearly. Make a common wine-glass warm by the fire, that it may keep quite dry for some time; set it on a table, and place on it Mr. Canton's little box, the balls hanging from the box a little beyond the edge of the table. Rub another warm wine-glass with a piece of black silk, or even a common silk handkerchief, so as to excite it. Then bring the glass over the box at the end farthest from the balls, at three or four inches' distance, and you will see the balls diverge, being then electrified positively by the natural quantity of electricity that was in the box, driven to that end by the repelling force of the atmosphere of the rubbed glass. Touch the box near the balls (the rubbed glass remaining as at first), and the balls will come together, your finger taking away the quantity driven to that end. Then withdraw finger and glass at the same time, and the quantity left in the box diffusing itself equally, the balls will diverge again and be negative. While in this state, rub your glass afresh, and pass it over the box without coming too near, and you will see, as you approach it, the balls first close; they are then in a natural state: as the glass comes nearer, they open again; they are then positive. When the glass passes and begins to leave them, they close again, and are then in the natural state. When it has quite left them, they open again, and are then negative. The rubbed glass may represent a positively charged cloud, which you see is thus capable of producing all the changes in the apparatus without the necessity of supposing any negative cloud at all. But yet I am convinced there are negative clouds; because they will sometimes drink at and through the apparatus a large full bottle of positive electricity, of which the apparatus itself could not have received and retained the hundredth part. And, indeed, it is easy to conceive how a strongly charged large positive cloud may reduce smaller clouds to a negative state, as it passes over or near them, by driving their natural quantity out of them to their

under side, whence it strikes into the earth, or to their farther end, whence it strikes into neighboring clouds; so that when the great cloud has passed or removed farther, they are left in a negative state, like the apparatus; they being, as well as it, often insulated bodies, not in contact with the earth or one another. And in the same manner it is equally easy to conceive how a large negative cloud may make others positive. The experiment you mention of filing the glass is similar to one I made in 1751, or 1752. I had supposed in my letter that the internal pores of glass were less than those near the surface, and so denied a passage to the electric fluid. To try whether this was so in fact, I ground one of my phials on one side extremely thin, passing a good way beyond the middle of the thickness, and very near to the other side, as I found on breaking it after the experiment. It charged as well after grinding as before; which satisfied me that my hypothesis was in that particular wrong. It is hard to conceive where the additional quantity on the charged side of glass is deposited, there is so much of it. I send you my meteorological paper, which has lately been printed here in the Transactions, following a paper of Mr. Hamilton's on the same subject. I am, &c. B. FRANKLIN.

CONJECTURE AS TO ELEPHANTS BEING NATIVES OF AMERICA.

To MR. CROGHAN.

SIR, *London, Aug. 5, 1767.*

I return you many thanks for the box of elephants' tusks and grinders. They are extremely curious on many accounts; no living elephants having been seen in any part of America by any of the Europeans settled there, or remembered in any tradition of the Indians. It is also puzzling to conceive what should have brought so many of them to die on the same spot; and that no such remains should be found in any other part of the continent, except in that very distant country Peru, from whence some grinders of the same kind formerly brought, are now in the museum of the Royal Society. The tusks agree with those of the African and Asiatic elephant, in being nearly of the same form and texture; and some of them, notwithstanding the length of time they must have lain, being still good ivory. But the grinders differ, being full of knobs, like the

grinders of a carnivorous animal; when those of the elephant, who eats only vegetables, are almost smooth. But then we know of no other animal with tusks like an elephant to whom such grinders might belong. It is remarkable, that elephants now inhabit naturally only hot countries where there is no winter, and yet these remains are found in a winter country; and it is no uncommon thing to find elephants' tusks in Siberia, in great quantities, when their rivers overflow, and wash away the earth, though Siberia is still more a wintery country than that on the Ohio; which looks as if the earth had anciently been in another position, and the climates differently placed from what they are at present. With great regard, I am, sir, your most obedient humble servant,

B. FRANKLIN.

ON THE COLICA PICTORUM, AND PERNICIOUS USE OF LEAD IN DISTILLERIES.

TO DR. EVANS.

DEAR SIR, *London, February* 20, 1768.

I wrote you a few lines by Capt. Falconer, and sent you Dr. Watson's new piece of Experiments in Inoculation, which I hope will be agreeable to you.

In yours of Nov. 20, you mention the lead in the worms of stills as a probable cause of the dry belly-ache among punch-drinkers in our West Indies. I had before acquainted Dr. Baker with a fact of that kind, the general mischief done by the use of leaden worms, when rum-distilling was first practised in New England, which occasioned a severe law there against them; and he has mentioned it in the second part of his piece not yet published. I have long been of opinion, that that distemper proceeds always from a metallic cause only; observing that it affects, among tradesmen, those that use lead, however different their trades—as glaziers, letter-founders, plumbers, potters, white-lead makers, and painters: from the latter, it has been conjectured, it took its name *colica pictorum*, by the mistake of a letter, and not from its being the disease of Poictou; and although the worms of stills ought to be of pure tin, they are often made of pewter, which has a great mixture in it of lead.

The Boston people pretending to interfere with the manufactures of this country, make a great clamor here against America in general. I have therefore endeavored to palliate matters a little in several public papers. It

would, as you justly observe, give less umbrage if we meddled only with such manufactures as England does not attend to. That of linen might be carried on more or less in every family, and silk, I think, in most of the colonies. But there are many manufactures that we cannot carry on to advantage, though we were at entire liberty. And after all, the true source of riches is husbandry. That is truly productive of new wealth; manufacturers only change forms, and whatever value they give to the materials they work upon, they at the same time consume an equal value in provisions, &c. So that riches are not increased by manufacturing; the only advantage is, that provisions in the shape of manufactures are more easily carried for sale to foreign markets. And where they cannot be easily carried to market, 'tis well so to transform them for our own use as well as foreign sale. In families also, where the children and servants of families have some spare time, 'tis well to employ it in making something. I am, with thanks for your good wishes, dear sir, yours, &c.

B. FRANKLIN.

ON CHIMNIES, &c.

To LORD KAIMES.

London, Feb. 28, 1768.

IT gave me great pleasure to see my dear good friend's name at the foot of a letter I received the other day, having been often uneasy at his long silence, blaming myself as the cause by my own previous backwardness and want of punctuality as a correspondent. I now suppose, (as in this he mentions nothing of it,) that a long letter I wrote him about this time twelvemonth, on the subject of the disputes with America, did miscarry, or that his answer to that letter miscarried, as I have never heard from him since I wrote that letter.

I have long been of an opinion similar to that you express, and think happiness consists more in small conveniencies or pleasures that occur every day, than in great pieces of good fortune that happen but seldom to a man in the course of his life. Thus I reckon it among my felicities, that I can set my own razor, and shave myself perfectly well; in which I have a daily pleasure, and avoid the uneasiness one is sometimes obliged to suffer from the dirty fingers or bad breath of a slovenly barber.

I congratulate you on the purchase of a new house so much to your mind, and wish that you may long inhabit it with comfort. The inconvenience you mention of neighboring smoke coming down the vents, is not owing to any bad construction of the vent down which it comes, and therefore not to be remedied by any change of form. It is merely the effect of a law of nature, whereby, whenever the outward air is warmer than the walls of the vent, the air included being by those walls made colder, and of course denser and heavier than an equal column of the outward air, descends into the room, and in descending draws other air into the vent above to supply its place; which being in its turn cooled and condensed by the cooler walls of the vent descends also, and so a current downwards is continued during the continuance of such difference in temperament between the outward air and the walls of the vent. When this difference is destroyed, by the outward air growing cooler, and the walls growing warmer, the current downwards ceases; and when the outward air becomes still colder than the walls, the current changes and moves from below upwards, the warmer walls rarefying the air they include, and thereby making it so much lighter than a column of the outward air of equal height, that it is obliged to give way to the other's superior weight and rise, is succeeded by colder air, which being warmed and rarefied in its turn, rises also, and so the upward current is continued. In summer, when fires are not made in the chimnies, the current generally sets downward from nine or ten in the morning during all the heat of the day, till five or six in the afternoon, then begins to hesitate, and afterwards to set upwards during the night, continuing till about nine in the morning, then hesitating for some time before it again sets downwards for the day. This is the general course, with some occasional variation of hours, according to the length of days or changes of weather. Now when the air of any vent is in this descending state, if the smoke issuing from a neighboring vent happens to be carried over it by the wind, part will be drawn in and brought down into the room. The proper remedy then is, to close the opening of the chimney in the room by a board so fitted that little or no air can pass, whereby the currents above-mentioned will be prevented. This board to remain during the summer, and when fires are not made in the chimney. Chimnies that have fires in them daily are not subject to this inconvenience, the walls of their vents being kept too warm to occasion any downward current during the hours between the going out of one fire and the kindling of another. And indeed, in summer, those vents that happen to go up close joined with the

kitchen vent, are generally kept so warm by that as to be free from the downward current, and therefore free from what you call neighbor smoke.

The Philadelphia grate which you mention is a very good thing, if you could get one that is rightly made, and a workman skilful in putting them up. Those generally made and used here are much hurt by fancied improvements in their construction, and I cannot recommend them. As fuel with you is cheap and plenty, a saving in it is scarce an object. The sliding plates (of which I sent a model to Sir Alex. Dick) are in my opinion the most convenient for your purpose, as they keep a room sufficiently warm, are simple machines, easily fixed, and their management easily conceived and understood by servants.

I shall leave Europe with much greater regret if I cannot first visit you and my other friends in Scotland. I promise myself this happiness, but am not yet clear that I shall have time for it. Your kind invitation is extremely obliging. With sincere esteem I am, my dear friend, your's most affectionately,

B. F.

ON ASTRONOMICAL SUBJECTS, ELECTRICITY, &c.

To Mr. Winthorp.

Dear Sir, *London, July* 2, 1768.

You must needs think the time long that your instruments have been in hand. Sundry circumstances have occasioned the delay. Mr. Short, who undertook to make the telescope, was long in a bad state of health, and much in the country for the benefit of the air. He however at length finished the material parts that required his own hand, and waited only for something about the mounting that was to have been done by another workman; when he was removed by death. I have put in my claim to the instrument, and shall obtain it from the executors as soon as his affairs can be settled. It is now become much more valuable than it would have been if he had lived, as he excelled all others in that branch. The price agreed for was 100l.

The equal altitudes and transit instrument was undertaken by Mr. Bird, who doing all his work with his own hands for the sake of greater truth and exactness, one must have patience that expects any thing from him. He is so singularly eminent in his way, that the commissioners of longitude have lately given him 500l. merely to discover and make public his method of dividing

instruments. I send it you herewith. But what has made him longer in producing your instrument is, the great and hasty demand on him from France and Russia, and our society here for instruments to go to different parts of the world for observing the next transit of Venus; some to be used in Siberia, some for the observers that go to the South Seas, some for those that go to Hudson's Bay. These are now all completed and mostly gone, it being necessary on account of the distance, that they should go this year to be ready on the spot in time. And now he tells me he can finish yours, and that I shall have it next week. Possibly he may keep his word. But we are not to wonder if he does not.

Mr. Martin, when I called to see his panopticon, had not one ready; but was to let me know when he should have one to show me. I have not since heard from him, but will call again.

Mr. Maskelyne wishes much that some of the governments in North America would send an astronomer to Lake Superior to observe this transit. I know no one of them likely to have a spirit for such an undertaking, unless it be the Massachusetts, or that have a person and instruments suitable. He presents you one of his pamphlets, which I now send you, together with two letters from him to me, relating to that observation. If your health and strength were sufficient for such an expedition, I should be glad to hear you had undertaken it. Possibly you may have an *élève* that is capable. The fitting you out to observe the former transit, was a public act for the benefit of science that did your province great honor.

We expect soon a new volume of the transactions, in which your piece will be printed. I have not yet got the separate ones which I ordered.

It is perhaps not so extraordinary that unlearned men, such as commonly compose our church vestries, should not yet be acquainted with, and sensible of the benefit of metal conductors, in averting the stroke of lightning, and preserving our houses from its violent effects; or that they should be still prejudiced against the use of such conductors, when we see how long even philosophers, men of extensive science and great ingenuity, can hold out against the evidence of new knowledge that does not square with their preconceptions, and how long men can retain a practice that is conformable to their prejudices, and expect a benefit from such practice, though constant experience shows its inutility. A late piece of the *Abbé Nollet*, printed last year in the Memoirs of the French Academy of Sciences, affords strong instances of this; for though

the very relations he gives of the effects of lightning in several churches and other buildings, shows clearly that it was conducted from one part to another by wires, gildings, or other pieces of metal that were within, or connected with the building; yet in the same paper he objects to the providing metalline conductors *without the building*, as useless or dangerous. He cautions people not to ring the church bells during a thunder storm, lest the lightning in its way to the earth should be conducted down to them by the bell-ropes, which are but bad conductors; and yet is against fixing rods on the outside of the steeple, which are known to be much better conductors, and which it would certainly choose to pass in, rather than in dry hemp. And though for a thousand years past bells have been consecrated by priests of the Romish church, in expectation that the sound of such blessed bells would drive away those storms, and secure our buildings from the stroke of lightning; and during so long a period it has not been found by experience that places within the reach of such blessed sound are safer than others where it is never heard; but that on the contrary, the lightning seems to strike steeples of choice, and that at the very time the bells are ringing; yet still they continue to bless the new bells and jangle the old ones whenever it thunders. One would think it was now time to try some other trick; and ours is recommended, (notwithstanding what this able philosopher says,) by more than twelve years' experience, wherein, among the great number of houses furnished with iron rods in North America, not one so guarded has been materially hurt with lightning, several have been evidently preserved by their means; while a number of houses, churches, barns, ships, &c. in different places, unprovided with rods, have been struck and greatly damaged, demolished or burnt. Probably the vestries of our English churches are not well acquainted with these facts; otherwise, since as protestants, they have no faith in the blessing of bells, they would be less excusable in not providing this other security for their respective churches, (more exposed than common buildings by their greater height,) and for the good people that may happen to be assembled in them during a tempest.

I have nothing new in the philosophical way to communicate to you, unless what follows may be such. When I was last year in Germany, I met with a glass, being a tube about eight inches long, half an inch in diameter, with a hollow ball of near an inch diameter at one end, and one of near an inch and a half at the other, hermetically sealed, and half filled with water. If one end is held in the hand, and the other a little elevated above the level, a constant

succession of large bubbles proceeds from the end in the hand to the other hand, and make an appearance that puzzled me much, till I found that the space not filled with water was also free from air; and either filled with a subtil invisible vapor continually rising from the water, and extremely rarefiable by the least heat at one end, and condensable again by the least cold at the other; or it is the very fluid of fire itself, which parting from the hand, pervades the glass, and by its expansive force depresses the water till it can pass between it and the glass, and escape to the other end, where it gets through the glass again into the air. I am rather inclined to the first opinion, but doubtful between the two. An ingenious artist here, *Mr. Nairne*, has made a number of them from mine, and improved them; for his are much more sensible than those I brought from Germany. I bored a very small hole through the wainscot in the seat of my window, through which a little cold air constantly entered, while the air in the room was kept warmer by fires daily made in it, being winter time. I placed one of his glasses with the elevated end against this hole, and the bubbles from the other end, which was in a warmer situation, were continually passing day and night, to the no small surprise of philosophical spectators. Each bubble discharged is larger than that from which it proceeds, and yet that is not diminished; and by adding itself to the bubble at the other end, that bubble is not increased, which seems very paradoxical. When the balls at each end are made large, and the connecting tube very small and bent at right angles, so that the balls, instead of being at the ends, may be brought on the side of the tube, and the tube is held so as that the balls are above it, the water will be depressed in that which is held in the hand, and rise in the other as a jet or fountain; when it is all in the other it begins to boil, as it were, by the vapor passing up through it; and the instant it begins to boil a sudden coldness is felt in the ball held; a curious experiment first observed and shown me by Mr. Nairne, similar to the old observation, I think of Aristotle, that the bottom of the boiling pot is not warm; and may help to explain that fact, if indeed it is a fact. When the water stands at an equal height in both these balls, and all is at rest, if you wet one of the balls by means of a feather dipped in spirit, though the spirit is of the same temperament as to heat and cold as the water in the glass, yet the cold occasioned by the evaporation of the spirit from the wetted ball will so condense the vapor over the water contained in that ball, as that the water of the other ball will be pressed up into it, followed by a succession of bubbles, till the spirit is all dried away. I think

the observations on these little instruments may suggest and be applied to some beneficial uses. It has been thought that water reduced to vapor by heat, was rarefied only 14,000 times, and on this principle our engines for raising water by fire are said to be constructed; but if the vapor so much rarefied from water is capable of being itself still farther rarefied to a boundless degree by the application of heat to the vessels, or parts of vessels, containing the vapor, (as at first it is applied to those containing the water,) perhaps a much greater power may be obtained with little additional expense. I think, too, that the power of easily moving water from one end to the other of a moveable beam, suspended in the middle by a small degree of heat, may be applied advantageously to some other mechanical purposes.

The magic square and circle, I am told, have occasioned a good deal of puzzling among the mathematicians here, but no one has desired me to show him my method of disposing the numbers. It seems they wish rather to investigate it themselves. When I have the pleasure of seeing you I will communicate it. With singular esteem and respect, I am, dear sir, your most obedient humble servant,

B. FRANKLIN.

ON THE FREE USE OF AIR.

To MONS. DUBOURG.

London, July 28, 1768.

* * * I greatly approve the epithet which you give, in your letter of the 8th of June, to the new method of treating the small-pox, which you call the *tonic* or bracing method; I will take occasion, from it, to mention a practice to which I have accustomed myself. You know the cold bath has long been in vogue here as a tonic; but the shock of the cold water has always appeared to me, generally speaking, as too violent, and I have found it much more agreeable to my constitution to bathe in another element, I mean cold air. With this view I rise almost every morning, and sit in my chamber without any clothes whatever, half an hour or an hour, according to the season, either reading or writing. This practice is not in the least painful, but, on the contrary, agreeable; and if I return to bed afterwards, before I dress myself, as sometimes happens, I make a supplement to my night's rest of one or two hours of the most pleasing sleep that can be imagined. I find no ill consequences whatever

resulting from it, and that at least it does not injure my health, if it does not in fact contribute much to its preservation. I shall therefore call it for the future a *bracing* or *tonic* bath. * * * B. FRANKLIN.

The Philosophical Survey of Ireland has this remarkable passage: "Smith mentions a Dr. Lyne, of Cork, who for the last 50 years of his life never glazed a window in his house, four of which he had in his bed-chamber, two on each side his bed. It is remarkable, that during all that time, nobody died in the house, till he himself was carried off by the small-pox at the age of 85. After the windows were glazed by his son, death became a frequent visitor."

OF VENTILATION, &c.

Written by Mr. Small, the Surgeon, but containing Dr. Franklin's Observations on the subject.

I do not know that we have in any author particular and separate directions concerning the ventilating of hospitals, crowded rooms, or dwelling-houses; or the making of proper drains for carrying off stagnant or putrid water. The want of such general information on these subjects, has induced me to endeavor to recollect all I can of the many instructive conversations I have had upon these matters, with that judicious and most accurate observer of nature, Dr. Benjamin Franklin. I do this in hopes that either the Doctor himself or some other person well qualified for the task, may follow the example set in so masterly a manner by Sir John Pringle, Bart. when speaking on the preservation of the health of seamen.

It has long been observed, that if a number of persons are shut up in a small room, of which the internal air has little or no communication with the external, the respiration of those who are so confined renders by degrees the air of that room effete, and unfit for the support of life.

Dr. Franklin was, if I mistake not, the first who observed that respiration communicated to the air a quality resembling the mephitic; such as the *Grotto del Cane* near Naples. The air impressed with this quality rises only to a certain height, beyond which it gradually loses it. The amendment begins in the upper part, and descends gradually until the whole becomes capable of sustaining life. The Doctor confirmed this by the following experiment. He breathed gently through a tube into a deep glass mug, so as to impregnate all the air in the mug with this quality. He then put a lighted *bougie* into the mug; and upon

touching the air therein the flame was instantly extinguished; by frequently repeating this operation, the *bougie* gradually preserved its light longer in the mug, so as in a short time to retain it to the bottom of it; the air having totally lost the bad quality it had contracted from the breath blown into it.

At the same time that the lower part of the air is thus affected, an acrid noxious quality may be communicated to its upper part in the room, occasioned by the volatile putrescent effluvia of the persons enclosed therein. "It is surprising," says Sir John Pringle, in his observations on the Diseases of the Army, fourth edit. p. 109, "in how few days the air will be corrupted in close and crowded wards; and what makes it hard to remedy the evil, is the difficulty of convincing either nurses or the sick themselves, of the necessity of opening the windows and doors at any time for a supply of fresh air."

It may be inferred from the above account of mephitic air, that such air can be but little altered by a ventilator in the ceiling of a room; and Dr. Franklin justly concluded, that in crowded rooms, and especially in bed-rooms in dwelling-houses, a current of air should be kept up in the lower part of the rooms, to carry off what is thus affected. He approved of the use of chimnies for this purpose, especially when the current is quickened by a fire. Even when there is not any fire in the chimney a current of air is constantly kept up in it, by its ascending or descending in the flue, as the weight of the internal or external air preponderates. This creates a kind of tide in the flue, conducing much to the healthiness of air in rooms: and hence we may see the injudiciousness of having chimney boards which fit closely, and thereby prevent a salutary circulation in the air. Hence also in warm weather we may account for liquors or other things kept in a chimney being cooled, and more so if means are used to create an evaporation around them.

Every person has an atmosphere of his own heated by the warmth of his body, which can be dissipated only by motion in the circumambient air. Thus in warm weather wind cools the body, by carrying off the personal atmosphere, and promoting at the same time a more free evaporation of the effluvia arising from the body. This creates a great degree of coolness on the skin. The personal atmosphere can be but little affected by a ventilator in the ceiling of a room, unless the admission of external air is so directed as to act principally on the air surrounding those in the room. Dr. Franklin when consulted on ventilating the House of Commons, represented that the personal atmosphere surrounding the members might be carried off by making outlets in the per-

pendicular parts of the seats, through which the air might be drawn off by ventilators, so placed, as to accomplish this without admitting any by the same channels. It will appear from what has been said, that windows placed high in the walls of churches or rooms intended for large assemblies, can contribute but little towards correcting the mephitic quality of the lower part of the air, or towards carrying off the personal atmospheres.

The experiments made for ventilating crowded rooms, by that most beneficent of men, the Rev. Dr. Stephen Hales, bring evident proof how much the upper part of the air in such places is vitiated by the volatile putrescent effluvia arising from the persons present in such rooms. He at the same time showed an easy and effectual way to carry off such vitiated air. His ventilators were, however, attended with the inconvenience of occasioning smoky chimnies, by drawing off so much air, that there was not a sufficiency left to keep a current strong enough to carry the smoke up the chimney, unless a door or window was left open. The circulating ventilators in windows were intended for refreshing the air in rooms, without affecting the current of air up the chimney, but they did not affect the mephitic air, nor the higher air near the ceiling of lofty rooms, which is most vitiated with putrescent particles; and they were besides often out of repair.

Instead of either of these, Dr. Franklin proposed that openings should be made close to the ceilings of rooms communicating with a flue, which should ascend in the wall close to the flues of the chimnies, and where it can be done conveniently, close to the flue of the kitchen chimney; because the fire burning pretty constantly there would keep the sides of that flue warmer than those of the other chimnies; whereby a quicker current of air would be kept up in the ventilating flue. Such a flue might be carried from the vaults or under ground offices. This would render them drier without altering their temperature much as to heat or cold. These ventilating flues would cause a constant discharge of the volatile putrescent *effluvia* without interfering with the current of air up the chimnies; while the current towards the chimney would carry off the *mephitic* air below. These ventilating flues would be peculiarly beneficial in bed-rooms of which the ceilings are low.

Dr. Franklin mentioned an instance of a number of Germans, who on their arrival in Pennsylvania were obliged to live in a large barn; there being at that time no other place of residence fit for them. Several small windows were made on both sides of the barn under the eaves. These windows were kept

constantly open, even during a severe frost in the winter; and this without any detriment to the health of the Germans. Prejudice, said he, has raised so great a dread against cold air in England, that such openings would make every person shudder at the thought of being exposed to so great a degree of cold: and therefore I did not dare to recommend a practice, the good effects of which I had known. The dormitory for the youths of Westminster School is a similar instance; for the glass put in their high lofty windows is soon broken, but seldom repaired; yet without prejudice to the health of the youths.

There is a channel by which much of the vitiated air escapes, and is but little attended to. Whoever looks at the ceilings of rooms in old houses, will soon discover the traces of the rafters, by a difference in color, in parts of the ceiling, and deposits in it part of its contents, which discolors the intervals between the joists. In the British Museum there is a remarkable instance of the inconveniency of the want of this outlet. The ceiling of one of the rooms in that house is covered with a picture, or painted cloth. This room continues warm with little fire; but the air soon affects the respiration of valetudinarians, as was often remarked by that accurate observer, Dr. G. Knight, late principal librarian.

An attentive observer will soon be convinced, that there is a current of warm air which ascends in the room from the chimney while a fire burns. Dr. Franklin showed that this was the case, by the following experiment. He suspended by a thread, a piece of pasteboard cut in a spiral form. The thread was fastened to the chimney-piece, so that the pasteboard drawn out in a spiral form, came near to the edge of the chimney. The constant current of warm air, heated by the fire, gave a continued circular motion to the pasteboard. This warm air ascending to the ceiling, there spread, and kept a constant motion in the upper part of the air. The warm air thus ascending, coming into contact with the cool walls, and being thereby condensed, becomes heavier, and so falls along the sides of the walls. Also the glass in windows being exposed to the temperature of the external air, in cold weather, becomes colder than any other part of the room; therefore more sensibly descends, as may be seen by approaching a lighted *bougie* to a window. The flame is then carried downwards by the air; or if the flame is extinguished, the smoke will more clearly shew this truth, by descending along the window till it meets the air of an equal temperature. This will be the case however tight the window; and the more so, the brighter and stronger the fire is, and the colder the external air; the circulation

of the air being thereby quickened. This accounts for the familiar caution of avoiding to sit in or near a window. This circulation of the air is yet more evidently proved by the following instance: When there is a bright strong fire in a close room, open the door and present immediately a lighted candle to the upper part of the door-way, the flame will bend outward; though warm air in the higher part rushes out, lower the candle gradually, and the strength of the current outward will lessen by degrees, as the candle is lowered, till it comes to a space in which the flame shall rise upright: continue to lower the candle gradually, and then the current of cold air inward will gradually increase and more strongly bend the flame of the candle inward. This will be the case even in frosty and windy weather. May it not be inferred from this circumstance of so strong a current of air outwards in the upper part of the door-way, that an opening over or in the upper part of the door in the ward of an hospital might be of advantage, especially if there is no ventilating flue in the ceiling? By such means a circulation of the air in the upper part of the ward could be constantly kept up; and thereby a vent would be given to the volatile putrescent particles. This vent might remain open at all times, without any prejudice to the patients.

What is said on this subject by Dr. John Armstrong, a gentleman no less remarkable for his benevolence than for his judgment and fine taste, may be properly mentioned here. "A constant circulation of fresh air is so necessary, so important in fevers, and in all feverish disorders, that it ought to be particularly considered in the construction of houses. It would be well if in all the apartments of every house, but especially in bed-chambers, the upper sashes of every window were contrived to let down; for by this means the admission of fresh air would at all times be perfectly safe; except during a raw, damp, foggy night; as the body, even when under such a sweat as could not without danger be interrupted, may receive all the refreshing, restorative, and invigorating influence of the air, without being exposed to a stream of it; meantime, where this is wanting, the best method to supply it is by drawing the bed-curtains close, now and then, for a few minutes at a time, while a free passage is made to the foul air, by opening the doors and windows." *Medical Essays, page* 22.

The noxious vapors that fill a sick room are not only offensive, but dangerous to those who continue in it for any time. If dangerous to people then in

health, how detrimental must they be to one oppressed and struggling under an enfeebling disease! It is a common thing in a campaign to distribute the sick soldiers, ill of malignant fevers, in open barns, where the putrid volatile poison is in a short time dissipated.

There is, in a volume of the *Mémoires et Observations recueillies par la Société Economique de Berne*, a letter concerning the health of the inhabitants of the *Pays de Vaud;* part of which I beg to present here as bearing a near analogy to this subject. The letter is written by a most accurate and judicious clergyman. "One fact," says he, "deserves to be noticed. Taking one year with another, a greater proportional number always die in towns than in villages. But whence comes it, that when epidemic diseases prevail, the mortality takes quite a different road; that is, it is much more considerable in villages than in towns? I have taken great pains to find out the cause of this phenomenon, and am apt to impute the difference to the difference of habitations. The poor in cities and great towns dwell in houses originally not intended for them; but which being so old and past repairing, as to be no longer tenantable by persons at their ease, fall to the lot of the lower class of people. In these houses the rooms are spacious, cold as ice, where the air plays freely around, with doors and windows that do not half shut. The inhabitants of these shattered houses are pitied; and yet the very circumstance of their being out of repair, is what contributes to the health of those who live in them, and facilitates their cure when diseases reign."

The more I see of hospitals the more I am convinced of the great want of instructions on duly ventilating them. It is surprising to see what little attention has been paid in some hospitals about London to this article, which have been built since the importance of ventilation has been well known. In all of them there is too great a distance between the windows and the ceilings, where the volatile putrescent particles may remain till they become very acrid. With pleasure I here do justice to the judgment and precaution of Messrs. Adam, in the manner of ventilating the great room built by them for the meeting of the Society for the Encouragement of Arts, &c. by leaving spaces between the panes of glass in the sky-lights, the panes overlaying each other. These spaces being concealed from the eye, do not alarm those fearful of cold air, and keep the room constantly sweet.

The hospitals the most judiciously built in this respect, which I have seen, are those in Philadelphia and in Lyons. In the hospital in Philadelphia the

wards are two stories high, with two rows of windows in each, the upper row being kept generally open: and the windows in the hospital at Lyons are very lofty; so that the upper sashes may be for the most part kept open. Both hospitals are by this means perfectly sweet; so sweet, that a military gentleman, who went with me into the hospital at Lyons, and was unaccustomed to sick rooms declared, that the air in the ward was not disagreeable to him, though it contained a considerable number of sick. Indeed they were kept very clean. I am sorry to say this is not the case in any one of our hospitals.

The naval hospital at Gibraltar is a square, which in a hot climate is itself a great imperfection, as the air within the square must in summer especially be greatly heated; and as if they had studied to keep the cool air out of the wards, the windows open into the square only: whereas, if the west side had been left open, the wards might have received the cool breezes from the bay. The sick are lodged in long galleries not sufficiently divided to have the patients in separate wards, and no openings to carry off the putrid air lodged among the rafters which support the roof.

On my arrival in the island of Minorca, as surgeon to the royal artillery there, I was surprised at the neglect of my predecessors in that office, in regard to ventilating the hospital. There were no openings in the wards in which the sick lay but the windows and doors, which were necessarily shut every night to prevent the irregularities soldiers might be guilty of. Where chimnies had been, they were built up to prevent the expense of fires: and thus during the night the sick lay in an absolutely confined air. The consequence was, that when the nurse opened the wards in the morning, she was obliged to withdraw instantly; for the highly-infected air often brought on a vomiting. In this case I applied to our most worthy and ingenious chief engineer, the late Col. Mackellar, for leave to use such means as might create a circulation of air in all the wards. In this he readily concurred, and ordered the necessary alterations.

In each ward in which the flue of the chimney remained, an opening of about four or five inches square was made through the wall into the flue, as near the ceiling as possible. Round holes of about three inches diameter were cut low in each door, covered with a sliding flap to shut the holes occasionally: in some of the wards there never had been chimnies. In these, holes were cut through the wall close to the ceiling, which opened into a common passage: and when two such wards were contiguous, a hole was cut through the dividing wall as well as in the door of each ward. One of the wards in which there had

not been a chimney, and was arched with stones, was constantly so damp that no use was made of it. The walls and arch were covered with green moss. They were afterwards scraped to clear them of the moss which retained moisture, and then covered with lime. This room became so dry, that though locked up for three months, during which I was confined with the gout, books and papers which had remained in it, were at the end of that time perfectly dry. The generally agreeable effects of this opening can scarcely be conceived: the wards, and indeed the whole hospital being rendered perfectly sweet, greatly to the benefit of the sick, as well as to the pleasure of the attendants.

The barracks in the square of the castle St. Philip, in which are lodged the detachment of the regiment of artillery doing duty there, are dry, except that being built of stone, they collect moisture on every sudden change of the air from cold to warm. Each barrack opens into the square, and is divided into three apartments. The part next the door has the whole height, and in it their arms and necessaries are kept. The inner part being about one-half, is divided into two floors. In the lower room they cook, each barrack having a mess or family in it, some of whom sleep in it. The fire, and the free access between it and the door, keep up a due circulation here. In the upper room most of the men sleep under a stone arch, the room being little more than six feet high in the centre, and therefore much lower in the sides. Under that arch from four to six or eight persons sleep, especially when there are children. This room is very stifling, there being little circulation of air in it, more especially in calm warm weather, such as the nights generally are there in summer. In order to create a circulation of air in this upper room, openings were made into the flues of the chimnies of the lower room as near the centre of the arch as possible, the chimnies being in the corner of the rooms below. In general these openings drew very well, and gave great relief, especially to those who had weak or diseased lungs. The proper remedy here would have been to have had small flues made near the flues of the chimnies below, could it have been done. This measure is too much neglected in all barracks.

Whoever may on any future occasion have the direction of military hospitals is already furnished with such judicious directions by my learned friends Sir John Pringle, Bart. and Dr. Donald Munro, that were I to say any thing on that subject, I could only copy whole pages from them. Sir John Pringle's speech on giving the gold medal of the Royal Society to Captain Cook, in which

he took occasion to point out the means of preserving the health of seamen, is equally deserving of commendation.

The healthiness of buildings does not perhaps depend more on the due ventilation of the rooms, than it does on the dryness of the situation, and of the foundation. Sir John Pringle in the first part of his "*Observations on the Diseases of the Army*," has given several instances of this truth. But as every man who regards his own life and health, or the lives and health of others, should be well acquainted with that work, I shall refer to the original. I have often lamented that the first part of that book, describing the natural consequences of the situation of places and their effects on health, has not been published separately; because it might thereby become of more general use to every man who leads a country life, or resorts thither frequently to enjoy quiet; for, being part of a book professedly treating of diseases, few think of consulting it, except those whose business it is to cure diseases.

However inviting the situation may be, and whatever may be the quality of the ground on which houses are built, general drains should be made all round the house deeper than the foundation of the building, to carry off the superfluous moisture: even the moisture that may be lodged under ground; for it is essentially necessary that the lower part of the house be kept continually dry.

The advantages of drains or sewers are remarkably felt in London, which before the fire of London, was frequently afflicted with contagious malignant fevers. Before that period all the waste water and filth remained above ground; and the people, as Erasmus complained, were very inattentive to keeping their houses clean. The wooden houses projected so much over the then very narrow streets, that the air became almost stagnant, and must have been loaded with putrid effluvia, there being very little circulation or current in the air thus confined to carry off these effluvia.

Before the city was rebuilt, that ingenious architect Sir Christopher Wren, planned and built the common sewers, as they continue to this day: and they are a lasting monument of his judgment and attention to the health and welfare of its inhabitants. These, together with the removal of signs and sign-posts, new paving and cleansing the streets, have been attended with such happy effects, that London and Westminster are now ranked among the most healthy spots in the island, for grown persons whose lungs can bear the cloud of smoke which generally hovers over them: and thus the apparent great calamity of a fire became a singular blessing to the city of London.

The quantity of water brought into the city by the New River and other water-works, which runs daily to waste, helps to cleanse and keep the common sewers sweet, and thereby contributes much to the healthiness of the city. Though foreign to the subject, it may be observed, that till the Restoration there were few gardens about London for supplying kitchen herbs. These became more numerous after that period, and still more so after the Revolution; a number of Dutch gardeners coming to England at that time. The quantity of vegetables supplied by these gardens contribute greatly to the healthiness of the citizens.

Rome would not perhaps have become mistress of so extraordinary an empire, situated as that city is near marshy grounds, had not the common sewers, which still attract the admiration of all travellers, been so early and judiciously built by Tarquinius Priscus, who may for that reason be called a second founder of Rome. The ancient Romans were particularly attentive to the draining and cultivating of these marshes, and they soon became the granary of ancient Rome: but being neglected during the invasions of the barbarous nations, they are now the reproach and just chastisement of the supine indolence and inactivity of the modern Romans.

Gravel, which is generally reckoned a dry and healthy foundation to build upon, is found by experience not to deserve that character at all times, unless deep drains are made to carry off the water of heavy rains long continued: for by such rains the gravel may be so charged with water, especially in flat grounds, that the lower parts of the houses erected on such soils may prove damp. In all the flat grounds along the Thames the cellars are often filled with water after heavy rains; and if the water continues there stagnant, till the animal or vegetable substances mixed with it begin to putrify, aches, agues, and putrid fevers are the natural consequences. Though Kensington palace stands high, and on a declivity, yet when King George the Second continued there till late in October, the lower parts of the house became damp, occasioned by the want of drains; and the servants became aguish. Stones which absorb and retain water, as the *Cantoon* stone in *Minorca* do, are in this respect similar to gravel. There was a remarkable instance of this in a magazine cut out of a solid rock of *Cantoon* stone in Georgetown, in Minorca. The magazine was covered with a well-limed arch and roof. Yet when the winter rains began to fall in November, the magazine was filled with water, as high as it was cut out of the rock. When drains were made to carry off the water, the magazine then became and continued to be sufficiently dry.

Might not low grounds on the banks of rivers, similar to those in Flanders, and so justly and judiciously complained of by Sir John Pringle, be rendered more healthy, by drains dug as deep as low-water mark in the adjacent rivers? Sluices might be made in the banks of the river, to prevent the tides or floods from entering into the drains. It would be advisable to cover the drains, to prevent the noxious vapors arising from putrid animal or vegetable substances, which generally rot in open ditches. The earth thrown out of the drains might serve to cover them, when the channels for carrying off the water are properly constructed. By these means no surface would be lost for the growth of vegetables.

Willows, alders, and such trees as delight in a moist or wet soil, may be planted on the banks of ditches, if any such are permitted to remain open, that their leaves may correct the putrid vapors arising from the stagnant water in the ditches. I fear, however, that in the autumn, when the effects of putrid vapors are most severely felt, the leaves of these trees, being then hardened by age, may in a great measure lose the power of correcting the putrid vapors. The late summer shoots may afford aid till the equinoxial rains clear the ditches of all filth. That trees have not the power of proving an effectual remedy against these putrid exhalations, the frequency of agues in the low countries in every such season is a sufficient proof. If such trees grow on the banks of ditches, they should be kept in a pollard state, to admit of a free circulation of air.

An observation of Dr. Franklin's deserves a place here, especially as it is not generally attended to. The opinion is indeed against it. The banks of rivers which have a quick motion, and run on a clear sandy bottom, are very agreeable and healthy situations: but the sides of rivers which have oozy bottoms, or marshy banks, or which are in the neighborhood of extensive marshes, are to be avoided. When necessity or any peculiar advantage obliges people to build near such bad neighbors, the south side, says the Doctor, is the most eligible; because the warm southerly winds, which promote a tendency to putrefaction, and are the most frequent, blow the noxious vapors from the buildings; whereas the northerly winds, which blow but seldom compared with the former, and which generally blow strongly, check putrefaction, and speedily carry off noxious vapors.

It is now well known that the stench arising from stationary privies, may be prevented by a cheap and easy method. The excrements may be received in tubs, so closely connected with the seat, that no air can pass. The lower ends

of the tub should be sunk below the surface of water contained in proper cisterns. The excrements are soon dissolved in water, and so carried off, *every time the privy is washed, which should be as often as it is used.*

In towns the stench of the common sewers is sometimes very offensive. This may be prevented by interrupting the current of air through them by means of stink-traps; the construction and utility of which, are of late years well known in London. As sand or other filth may be apt to lodge in the deepened place, it should be so contrived, as to be easily come at, in order to clear away every obstruction.

Let me add here to the method of correcting bad water, proposed by Dr. Munro, in his *Essay on the means of preserving the health of soldiers*, the following easy method of keeping water clear and sweet, ascertained by several experiments, made some years ago by the Society for the Encouragement of Arts, &c. in London. The method is to mix clay with the water in such quantities, that when the clay is dissolved, the hand immersed under the surface of the water shall not be seen. The clay subsiding, carries down with it all the impurities, and, in a manner burying them, prevents their communicating any bad taste or smell to the water, which thereby continues long clear and sweet. Clay may probably correct stagnant water, and thereby preserve it clear and good in dry seasons, and may thus become very useful, where there is no running water. If any bad taste or smell remains after the use of the clay, it may be carried off by one of the ventilators recommended for that purpose by the Rev. Dr. Hales. The clear water may be drawn off by a siphon or a cock, placed high enough not to touch the clay. A. S.

ON RAIN.

Extract of a Letter to Dr. Percival, 1771.

"On my return to London I found your favor of the 16th May, (1771.) I wish I could, as you desire, give you a better explanation of the phenomenon in question, since you seem not quite satisfied with your own; but I think we want more and a greater variety of experiments in different circumstances, to enable us to form a thoroughly satisfactory hypothesis. Not that I make the least doubt of the facts already related, as I know both Lord Charles Cavendish and Dr. Heberden to be very accurate experimenters: but I wish to know the event of

the trials proposed in your six queries; and also, whether in the same place where the lower vessel receives nearly twice the quantity of water that is received by the upper, a third vessel placed at half the height will receive a quantity proportionable. I will, however, endeavor to explain to you what occurred to me, when I first heard of the fact.

I suppose it will be generally allowed, on a little consideration of the subject, that scarce any drop of water was, when it began to fall from the clouds, of a magnitude equal to that it has acquired when it arrives at the earth: the same of the several pieces of hail; because they are often so large and weighty, that we cannot conceive a possibility of their being suspended in the air, and remaining at rest there for any time, how small soever; nor do we conceive any means of forming them so large, before they set out to fall. It seems then, that each beginning drop, and particle of hail, receives continual addition in its progress downwards. This may be several ways: by the union of numbers in their course, so that what was at first only a descending mist, becomes a shower; or by each particle in its descent through air that contains a great quantity of dissolved water, striking against, attaching to itself, and carrying down with it, such particles of that dissolved water as happen to be in its way; or attracting to itself such as do not lie directly in its course, by its different state with regard either to common or electric fire; or by all these causes united.

In the first place, by the uniting of numbers, larger drops might be made, but the quantity falling in the same space would be the same at all heights; unless, as you mention, the whole should be contracted in falling, the lines described by all the drops converging, so that what set out to fall from a cloud of many thousand acres, should reach the earth in perhaps a third of that extent, of which I somewhat doubt. In the other cases we have two experiments.

1. A dry glass bottle, filled with very cold water, in a warm day, will presently collect from the seemingly dry air that surrounds it, a quantity of water that shall cover its surface and run down its sides; which perhaps is done by the power wherewith the cold water attracts the fluid: common fire that had been united with the dissolved water in the air, and drawing that fire through the glass into itself, leaves the water on the outside.

2. An electrified body left in a room for some time, will be more covered with dust than other bodies in the same room not electrified; which dust seems to be attracted from the circumambient air.

Now we know that rain, even in our hottest days, comes from a very cold

region. Its falling sometimes in the form of ice shows this clearly; and perhaps even the rain is snow or ice when it first moves downwards, though thawed in falling: and we know that the drops of rain are often electrified. But those causes of addition to each drop of water, or piece of hail, one would think could not long continue to produce the same effect; since the air through which the drops must fall, must soon be stripped of its previously dissolved water, so as to be no longer capable of augmenting them. Indeed very heavy showers of either are never of long continuance, but moderate rains often continue so long as to puzzle this hypothesis: so that upon the whole I think, as I intimated before, that we are yet hardly ripe for making one.

REPORT ON LIGHTNING CONDUCTORS FOR THE POWDER MAGAZINES AT PURFLEET.

TO THE PRESIDENT AND COUNCIL OF THE ROYAL SOCIETY.

(*Drawn up by B. Franklin Aug.* 21, 1772.)

GENTLEMEN,

The Society being consulted by the Board of Ordnance, on the propriety of fixing conductors for securing the Powder Magazines at Purfleet from lightning, and, having thereupon done us the honor of appointing us a committee to consider the same and report our opinion, we have accordingly visited those buildings, and examined with care and attention their situation, construction, and circumstances, which we find as follows:—

They are five in number, each about 150 feet long, about 52 feet wide, built of brick, arched under the roof, which in one of them is slated with a coping of lead 22 inches wide on the ridge, from end to end; and the others, we were informed, are soon to be covered in the same manner. They stand parallel to each other, at about 57 feet distance, and are founded on a chalk rock about 100 feet from the river, which rises, in high tides, within a few inches of the level of the ground, its brackish water also soaking through to the wells that are dug near the buildings.

The barrels of powder, when the magazines are full, lie piled on each other up to the spring of the arches; and there are four copper hoops on each barrel, which, with a number of perpendicular iron bars (that come down through the

arches to support a long grooved piece of timber wherein the crane was usually moved and guided to any part where it was wanted), formed broken conductors, within the building, the more dangerous from their being incomplete; as the explosion from hoop to hoop in the passage of lightning drawn down through the bars among the barrels, might easily happen to fire the powder contained in them: but the workmen were removing all those iron bars (by the advice of some members of the society who had been previously consulted); a measure we very much approve of.

On an elevated ground, nearly equal in height with the tops of the magazines, and 150 yards from them, is the house wherein the Board usually meet: it is a lofty building, with a pointed hip roof, the copings of lead down to the gutters; whence leaden pipes descend at each end of the building, into the water of two wells 40 feet deep, for the purpose of conveying water forced up by engines to a cistern in the roof.

There is also a proof-house adjoining to the end of one of the magazines; and a clock-house at the distance of feet from them, which has a weather-cock on an iron spindle, and probably some incomplete conductors within, such as the wire usually extending up from a clock to its hammer, the clock, pendulum, rod, &c.

The blowing-up of a magazine of gunpowder by lightning within a few years past at Brescia in Italy, which demolished a considerable part of the town with the loss of many lives, does in our opinion strongly urge the propriety of guarding such magazines from that kind of danger. And since it is now well known from many observations, that metals have the property of conducting, and a method has been discovered of using that property for the security of buildings, by so disposing and fixing iron rods, as to receive and convey safely away such lightning as might otherwise have damaged them, which method has been practised near 20 years in many places, and attended with success in all the instances that have come to our knowledge, we cannot therefore but think it advisable to provide conductors of that kind for the magazines in question.

In common cases it has been judged sufficient, if the lower part of the conductor were sunk three or four feet into the ground till it came to moist earth; but this being a case of the greatest importance, we are of opinion that greater precaution should be taken. Therefore we would advise, that at each end of each magazine a well should be dug in or through the chalk, so deep as to have in it at least 4 feet of standing water. From the bottom of this water

should rise a piece of leaden pipe to or near the surface of the ground, where it should be strongly joined to the end of an upright iron bar, an inch and a half in diameter, fastened to the wall by leaden straps, and extending ten feet above the ridge of the building, tapering from the ridge upwards to a sharp point; the upper 12 inches to be copper, the iron to be painted.

We mention lead for the under-ground part of the conductor, as less liable to rust in water and moist places, in the form of a pipe, as giving greater stiffness for the substance; and iron for the part above ground as stronger and less likely to be cut away. The pieces of which the bar may be composed should be screwed strongly into each other by a close joint, with a thin plate of lead between the shoulders, to make the joining or continuation of metal more perfect. Each rod, in passing above the ridge, should be strongly and closely connected by iron or lead, or both, with the leaden coping of the roof, whereby a communication of metal will be made between the two bars of each building, for a more free and easy conducting of the lightning into the earth.

We also advise, in consideration of the great length of the buildings, that two wells of the same depth with the others, should be dug within 12 feet of the doors of the two outside magazines; that is to say, one of them on the north side of the north building, the other on the south side of the south building; from the bottoms of which wells similar conductors should be carried up to the eaves, there joining well with a plate of lead extending on the roof up to the leaden coping of the ridge, the said plate of lead being of equal substance with that of the coping.

We are further of opinion, that it will be right to form a communication of lead from the top of the chimney of the proof-house to the lead on its ridge, and thence to the lead on the ridge of the corridor, and thence to the iron conductor of the adjacent end of the magazine; and also to fix a conductor from the bottom of the weathercock spindle of the clock-house down on the outside of that building into the moist earth.

As to the board-house, we think it already well furnished with conductors by the several leaden communications above mentioned, from the point of the roof down into the water, and that by its height and proximity it may be some security to the buildings below it: we therefore propose no other conductor for that building, and only advise erecting a pointed rod on the summit, similar to those before described, and communicating with those conductors.

To these directions we would add a caution, that in all future alterations or

repairs of the buildings, special care be taken that the metalline communications are not cut off or removed.

It remains that we express our acknowledgments to Sir Charles Frederick, surveyor-general of the ordnance, for the obliging attention with which he entertained and accommodated us on the day of our inquiry. With very great respect we are, gentlemen, your most obedient humble servants,

(Signed) H. CAVENDISH,
WILLIAM WATSON,
B. FRANKLIN,
J. ROBERTSON.

Aug. 21, 1772.

EXPERIMENTS, OBSERVATIONS, AND FACTS RELATIVE TO THE UTILITY OF LONG POINTED RODS, FOR SECURING BUILDINGS FROM DAMAGE BY STROKES OF LIGHTNING.[1]

EXPERIMENT I. *Aug.* 27, 1772.

The prime conductor of an electric machine, A. B.[2] being supported about 10½ inches above the table by a wax-stand, and under it erected a *pointed wire* 7½ inches high, and ⅛ of an inch thick, tapering to a sharp point, and communicating with the table: when the *point* (being uppermost) is *covered* by the end of a finger, the conductor may be full charged, and the electrometer *c*[3] will rise to the height indicating a full charge: but the moment the point is *uncovered*, the ball of the electrometer drops, showing the prime conductor to be instantly discharged and nearly emptied of its electricity. Turn the wire, its *blunt* end upwards, (which represents an unpointed bar,) and no such effect follows, the electrometer remaining at its usual height when the prime conductor is charged.

Observation.—*What* quantity of lightning a high pointed rod well communicating with the earth may be expected to discharge from the clouds silently in in a short time, is yet unknown; but I have reason, from a particular fact, to think it may at times be very great. In Philadelphia I had such a rod fixed to the top of my chimney, and extending about nine feet above it. From the foot

---

[1] Read at the committee appointed to consider the erecting conductors to secure the magazines at Purfleet. Aug. 27, 1772.

[2] See PLATE 2. [3] Mr. Henley's.

of this rod, a wire (the thickness of a goose-quill) came through a covered glass tube in the roof, and down through the well of the staircase; the lower end connected with the iron spear of a pump. On the staircase opposite to my chamber-door, the wire was divided; the ends separated about six inches, a little bell on each end; and between the bells a little brass ball suspended by a silk thread, to play between and strike the bells when clouds passed with electricity in them. After having frequently drawn sparks and charged bottles from the bell of the upper wire, I was one night awaked by loud cracks on the staircase. Starting up and opening the door, I perceived that the brass ball, instead of vibrating as usual between the bells, was repelled and kept at a distance from both; while the fire passed sometimes in very large quick cracks from bell to bell, and sometimes in a continued dense white stream, seemingly as large as my finger; whereby the whole staircase was enlightened as with sun-shine, so that one might see to pick up a pin.[1] And from the apparent quantity thus discharged, I cannot but conceive that a number[2] of such conductors must considerably lessen that of any approaching cloud, before it comes so near as to deliver its contents in a general stroke:—an effect not to be expected from bars unpointed, if the above experiment with the blunt end of the wire is deemed pertinent to the case.

EXPERIMENT II.

The pointed wire under the prime conductor continuing of the same height, *pinch* it between the thumb and finger near the top, so as *just to conceal* the point; then turning the globe, the electrometer will rise and mark the full charge. Slip the fingers down so as to discover about half an inch of the wire, then another half inch, and then another; at every one of these motions *discovering more and more* of the pointed wire: you will see the electrometer fall quick and

---

[1] Mr. De Romas saw still greater quantities of lightning brought down by the wire of his kite. He had "explosions from it, the noise of which greatly resembled that of thunder, and were heard (from without) into the heart of the city, notwithstanding the various noises there. The fire seen at the instant of the explosion had the shape of a spindle eight inches long and five lines in diameter. Yet from the time of the explosion to the end of the experiment, no lightning was seen above, nor any thunder heard. At another time the streams of fire issuing from it were observed to be an inch thick and ten feet long."—*See Dr. Priestley's History of Electricity*, pages 354—6, *first edition*.

[2] Twelve were proposed on and near the magazines at Purfleet.

proportionably, stopping when you stop. If you slip down the *whole distance* at once, the ball falls instantly down to the stem.

Observation.—From this experiment it seems that a greater effect in drawing off the lightning from the clouds may be expected from *long* pointed rods, than from *short* ones; I mean from such as show the greatest length, *above the building* they are fixed on.

EXPERIMENT III.

Instead of pinching the point between the thumb and finger, as in the last experiment, keep the thumb and finger each at *near an inch distance* from it, but at the *same height*, the point between them. In this situation, though the point is fairly exposed to the prime conductor, it has little or no effect; the electrometer rises to the height of a full charge. But the moment the fingers are *taken away*, the ball falls quick to the stem.

Observation.—To explain this, it is supposed, that one reason of the sudden effect produced by a long naked pointed wire is, that (by the repulsive power of the positive charge in the prime conductor) the natural quantity of electricity contained in the pointed wire is driven down into the earth, and the point of the wire made strongly *negative;* whence it attracts the electricity of the prime conductor more strongly than bodies in their natural state would do; the *small quantity of common matter* in the point, not being able by its attractive force to retain its *natural quantity of the electric fluid*, against the force of that repulsion. But the finger and thumb being substantial and blunt bodies, though as near the prime conductor, hold up better their *own* natural quantity against the force of that repulsion; and so, continuing nearly in the natural state, they jointly operate on the electric fluid in the point, opposing its descent, and *aiding the point* to retain it; contrary to the repelling power of the prime conductor, which would drive it down. And this may also serve to explain the different powers of the point in the preceding experiment, on the slipping down the finger and thumb to different distances.

Hence is collected, that a pointed rod erected *between two tall chimnies*, and very little higher, (an instance of which I have seen) cannot have so good an effect, as if it had been erected on one of the chimnies, its whole length above it

EXPERIMENT IV.

If, *instead* of a long pointed wire, a *large solid body*, (to represent a building without a point) be brought under and as near the prime conductor, when charged; the ball of the electrometer will *fall* a little; and on taking away the large body, will *rise again.*

Observation.—Its *rising again* shows that the prime conductor lost little or none of its electric charge, as it had done through the point: The *falling* of the ball while the large body was under the conductor, therefore shows that a quantity of its atmosphere was drawn from the end where the electrometer is placed to the part immediately over the large body, and there accumulated *ready* to strike into it with its whole undiminished force, as soon as within the striking distance; and, were the prime conductor moveable like a *cloud*, it would approach the body by attraction till within that distance. The swift motion of clouds, as driven by the winds, probably prevents this happening so often as otherwise it might do; for, though parts of the cloud may stoop towards a building as they pass, in consequence of such attraction, yet they are carried forward beyond the striking distance before they could by their descending come within it.

EXPERIMENT V.

Attach a small light *lock of cotton* to the under side of the prime conductor, so that it may hang down towards the pointed wire mentioned in the first experiment. *Cover* the point with your finger, and the globe being turned, the cotton will extend itself, stretching down towards the finger as at *a;* but on *uncovering* the point, it instantly flies up to the prime conductor, as at *b*, and continues there as long as the point is uncovered. The moment you cover it again, the cotton flies down again, extending itself towards the finger; and the same happens in degree, if (instead of the finger) you use, uncovered, the *blunt* end of the wire uppermost.

Observation.—To explain this, it is supposed that the cotton, by its connection with the prime conductor, receives from it a quantity of its electricity; which occasions its being attracted by the *finger* that remains still in nearly its natural state. But when a *point* is opposed to the cotton, its electricity is thereby taken from it, faster than it can at a distance be supplied with a fresh quantity from the conductor. Therefore being reduced *nearer* to the natural state, it is attracted *up* to the electrified prime conductor; *rather than down*, as before, to the finger.

Supposing farther that the prime conductor represents a cloud charged with the electric fluid; the cotton, a ragged fragment of cloud (of which the underside of great thunder-clouds are seen to have many); the finger, a chimney or highest part of a building; we then may conceive that when such a cloud passes over a *building*, some one of its ragged underhanging fragments may be drawn down by the chimney or other high part of the edifice; creating thereby a *more easy communication* between it and the great cloud.—But a *long pointed rod* being presented to this fragment, may occasion its receding, like the cotton, up to the great cloud; and thereby *increase*, instead *of lessening* the distance, so as often to make it *greater* than the striking distance. Turning the *blunt end of a wire* uppermost, (which represents the unpointed bar) it appears that the same good effect is not from that to be expected. A long pointed rod, it is therefore imagined, may *prevent* some strokes; as well as *conduct* others that fall upon it, when a great body of cloud comes on so heavily that the above repelling operation on fragments cannot take place.

EXPERIMENT VI.

Opposite the side of the prime conductor place *separately*, isolated by wax stems, Mr. Canton's two boxes with pith balls suspended by fine linen threads. On each box, lay a wire six inches long and $\frac{1}{3}$ of an inch thick, tapering to a sharp point; but so laid, as that four inches of the *pointed* end of *one* wire, and an equal length of the *blunt* end of the *other*, may project beyond the ends of the boxes; and both at 18 inches distance from the prime conductor. Then charging the prime conductor by a turn or two of the globe, the balls of each pair will separate; those of the box whence the point projects most, *considerably;* the others *less*. Touch the prime conductor, and those of the box with the *blunt* point will *collapse*, and join. Those connected with the *point* will at the same time approach each other, *till* within about an inch, and *there remain*.

Observation.—This seems a proof, that though the small sharpened part of the wire must have had a *less natural* quantity in it before the operation, than the thick blunt part; yet a greater quantity was *driven down from it* to the balls. Thence it is again inferred that the pointed rod is rendered *more negative:* and farther, that if a *stroke must fall* from the cloud over a building, furnished with such a rod, it is more likely to be drawn to that pointed rod, than to a blunt one; as being more strongly negative, and of course its attraction stronger.

And it seems more eligible, that the lightning should fall on the point of the conductor (provided to convey it into the earth), than on any other part of the building, *thence* to proceed to such conductor. Which end is also more likely to be obtained by the length and loftiness of the rod; as protecting more extensively the building under it.

It has been objected, that erecting pointed rods upon *edifices*, is to *invite* and draw the lightning into *them*; and therefore dangerous. Were such rods to be erected on buildings, *without continuing the communication* quite down into the moist earth, this objection might then have weight; but when such complete conductors are made, the lightning is invited not into the building, but into the *earth*, the situation it aims at, and which it always seizes every help to obtain, even from broken partial metalline conductors.

It has also been suggested, that from such electric experiments *nothing certain can be concluded as to the great operations of nature*; since it is often seen that experiments, which have succeeded in small, in large have failed. It is true that in mechanics this has sometimes happened. But when it is considered that we owe our first knowledge of the nature and operations of lightning to observations on such small experiments; and that on carefully comparing the most accurate accounts of former facts, and the exactest relations of those that have occurred since, the effects have surprisingly agreed with the theory; it is humbly conceived that in natural philosophy, in this branch of it at least, the suggestion has not so much weight; and that the farther new experiments now adduced in recommendation of *long* sharp-pointed rods, may have some claim to credit and consideration.

It has been urged too, that though points may have considerable effects on a *small* prime conductor at *small distances*; yet on *great* clouds and at *great distances*, nothing is to be expected from them. To this it is answered, that in those *small* experiments it is evident the points act at a greater than the *striking* distance; and in the large way, their service is *only expected* where there is *such* nearness of the cloud, as to *endanger a stroke*; and there, it cannot be doubted the points must have some effect. And if the quantity discharged by a single pointed rod may be so considerable as I have shown it, the quantity discharged by a number, will be proportionably greater.

But this part of the theory does not depend alone on *small* experiments. Since the practice of erecting pointed rods in America, (now near 20 years[1])

[1] About the year 1752.

five of them have been struck by lightning; viz. Mr. Raven's and Mr. Maine's in South Carolina; Mr. Tucker's in Virginia; Mr. West's and Mr. Moulder's in Philadelphia. Possibly there may have been more that have not come to my knowledge. But in every one of these, the lightning did *not* fall upon the *body of the house*, but precisely on the several *points* of the rods; and, though the conductors were sometimes *not sufficiently large and complete*, was conveyed into the earth, without any material damage to the buildings. Facts then *in great*, as far as we have them authenticated, justify the opinion that is drawn from the experiments *in small*, as above related.

It has also been objected, that unless we knew the quantity that might *possibly* be discharged at one stroke from the clouds, we cannot be sure we have provided *sufficient* conductors; and therefore cannot depend on their conveying away *all* that may fall on their points. Indeed we have nothing to form a judgment by in this case but past facts; and we know of no instance where a *complete* conductor to the moist earth *has* been insufficient, if half an inch diameter. It is probable that many strokes of lightning have been conveyed through the common leaden pipes affixed to houses to carry down the water from the roof to the ground: and there is no account of such pipes being melted and destroyed, as must sometimes have happened, if they had been insufficient. We can then only judge of the dimensions proper for a conductor of lightning, as we do of those proper for a *conductor of rain*, by past observation. And as we think a pipe of three inches' bore sufficient to carry off the rain that falls on a square of twenty feet, because we never saw such a pipe glutted by any shower; so we may judge a conductor of an inch diameter, more than sufficient for any stroke of lightning that will fall on its point. It is true that if another deluge should happen wherein the windows of heaven are to be opened, such pipes may be unequal to the falling quantity; and if God for our sins should think fit to rain fire upon us, as upon some cities of old, it is not expected that our conductors, of whatever size, should secure our houses against a miracle. Probably as water drawn up into the air, and there forming clouds, is disposed to fall again in *rain* by its natural gravity, as soon as a number of particles sufficient to make a drop can get together; so when the clouds are (by whatever means) over or undercharged (with the *electric fluid*) to a degree sufficient to attract them towards the earth, the equilibrium is restored, before the difference becomes great beyond that degree. Mr. *Lane's electrometer*, for limiting precisely

the quantity of a shock that is to be administered in a medical view, may serve to make this more easily intelligible. The discharging knob does by a screw approach the conductor to the distance intended, but there remains fixed. Whatever power there may be in the glass globe to collect the fulminating fluid, and whatever capacity of receiving and accumulating it there may be in the bottle or glass jar; yet neither the accumulation, or the discharge, ever exceeds the destined quantity. Thus, were the *clouds* always at a certain fixed distance from the earth, all discharges would be made when the quantity accumulated was equal to the distance. But there is a circumstance which, by occasionally lessening the distance, lessens the discharge; to wit, the moveableness of the clouds, and their being drawn nearer to the earth by attraction when electrified; so that discharges are thereby rendered more frequent and of course less violent. Hence whatever the quantity may be in nature, and whatever the power in the clouds of collecting it; yet an accumulation and force beyond what mankind has hitherto been acquainted with, is scarce to be expected.[1] B. F.

ON THE SPOTS IN THE SUN: A NEW HYPOTHESIS.

To Mr. Humphry Marshall.

Sir, *London, Feb.* 14, 1773.

A considerable time after its arrival I received the box of seeds you sent me the beginning of last year, with your observations on spots of the sun. The seeds I distributed among some of my friends who are curious: accept my thankful acknowledgments for them. The observations I communicated to our

---

[1] It may be fit to mention here, that the immediate occasion of the dispute concerning the preference between pointed and blunt conductors of lightning, arose as follows.—A powder mill having blown up at Brescia, in consequence of its being struck with lightning, the English board of ordnance applied to their painter, Mr. Wilson, then of some note as an electrician, for a method to prevent the like accident to their magazines at Purfleet. Mr. Wilson having advised a blunt conductor, and it being understood that Dr. Franklin's opinion, formed upon the spot, was for a pointed one; the matter was referred in 1772 to the Royal Society, and by them, as usual, to a committee, who, after consultation, prescribed a method conformable to Dr. Franklin's theory. But a harmless stroke of lightning having, under particular circumstances, fallen upon one of the buildings and its apparatus in May 1777; the subject came again into violent agitation, and was again referred to the society, and by the society again referred to a new committee, which committee confirmed the decision of the first committee.

astronomers of the Royal Society, who are much pleased with them, and hand them about from one to another; so that I have had little opportunity of examining them myself, they not being yet returned to me. Here are various opinions about the solar spots. Some think them vast clouds of smoke and soot, arising from the consuming fuel on the surface, which at length take fire again on their edges, consuming and daily diminishing till they totally disappear. Others think them spots of the surface, in which the fire has been extinguished, and which by degrees is rekindled. It is however remarkable, that though large spots are seen gradually to become small ones, no one has observed a small spot gradually become a large one; at least I do not remember to have met with such an observation. If this be so, it should seem they are suddenly formed of their full size; and perhaps if there were more such constant and diligent observers as you, some might happen to be observing at the instant such a spot was formed, when the appearances might give some ground of conjecture by what means they were formed. The professor of astronomy at Glasgow, Dr. Wilson, has a new hypothesis. It is this: that the sun is a globe of solid matter, all combustible perhaps, but whose surface only is actually on fire to a certain depth, and all below that depth unkindled, like a log of wood, whose surface to half an inch deep may be burning coal, while all within remains wood. Then he supposes, by some explosion similar to our earthquakes, the burning part may be blown away from a particular district, leaving bare the unkindled part below, which then appears a spot, and only lessens as the fluid burning matter by degrees flows in upon it on all sides, and at last covers or rekindles it. He founds this opinion on certain appearances of the edges of the spots as they turn under the sun's disk, or emerge again on the other side: for if there are such hollows in the sun's face as he supposes, and the bright border round their edges be the fluid burning matter flowing down the banks into the hollow, it will follow, that while a spot is in the middle of the sun's disk, the eye looking directly upon the whole may discern that border all round; but when the hollow is moved round to near the edge of the disk, then, though the eye which now views it aslant can see full the farthest bank, yet that which is nearest is hidden, and not to be distinguished; and when the same spot comes to emerge again on the other side of the sun, the bank which before was visible is now concealed, and that concealed which before was visible, gradually changing, however, till the spot reaches the middle of the disk, when the bank all round may be seen as before. Perhaps your telescope

may be scarce strong enough to observe this. If it is, I wish to know whether you find the same appearances. When your observations are returned to me, and I have considered them, I shall lodge them among the papers of the society, and let you know their sentiments. With great esteem and regard, I am, &c.

B. FRANKLIN.

ON THE ANALOGY BETWEEN MAGNETISM AND ELECTRICITY.

To MONSIEUR DUBOURG.

SIR, *London, March* 10, 1773.

As to the magnetism which seems produced by electricity, my real opinion is, that these two powers of nature have no affinity whatever with each other; and that the apparent production of magnetism is purely accidental. The matter may be explained thus:

1st. The earth is a great magnet.

2dly. There is a subtile fluid, called the magnetic fluid, which exists in all ferruginous bodies, equally attracted by all their parts, and equally diffused through their whole substance; at least where the equilibrium is not disturbed by a power superior to the attraction of the iron.

3dly. This natural quantity of the magnetic fluid, which is contained in a given piece of iron, may be put in motion, so as to be more rarefied in one part and more condensed in another; but it cannot be withdrawn by any force that we are yet made acquainted with, so as to leave the whole in a negative state, at least relatively to its natural quantity; neither can it be introduced so as to put the iron into a positive state, or render it *plus*. In this respect therefore magnetism differs from electricity.

4thly. A piece of soft iron allows the magnetic fluid which it contains to be put in motion by a moderate force, so that being placed in a line with the magnetic pole of the earth, it immediately acquires the properties of a magnet; its magnetic fluid being drawn or forced from one extremity to the other; and this effect continues as long as it remains in the same position, one of its extremities becoming positively magnetised, and the other negatively. This temporary magnetism ceases as soon as the iron is turned east and west, the fluid immediately diffusing itself equally through the whole iron, as in its natural state,

5thly. The magnetic fluid in hard iron, or steel, is put in motion with more difficulty, requiring a force greater than the magnetism of the earth to excite it; and when once it has been forced from one extremity of the steel to the other, it is not easy for it to return; and thus a bar of steel is converted into a permanent magnetic.

6thly. A great heat, by expanding the substance of this steel, and increasing the distance between its particles, affords a passage to the electric fluid, which is thus again restored to its proper equilibrium; the bar appearing no longer to possess magnetic virtue.

7thly. A bar of steel, which is not magnetic, being placed in the same position relatively to the pole of the earth which the magnetic needle assumes, and in this position being heated and suddenly cooled, becomes a permanent magnet. The reason is, that while the bar was hot, the magnetic fluid which it naturally contained, was easily forced from one extremity to the other by the magnetic virtue of the earth; and that the hardness and condensation produced by the sudden cooling of the bar, retained it in this state without permitting it to resume its original situation.

8thly. The violent vibrations of the particles of a steel bar, when forcibly struck in the same position, separate the particles in such a manner during their vibration, that they permit a portion of the magnetic fluid to pass, influenced by the natural magnetism of the earth; and it is afterwards so forcibly retained by the re-approach of the particles when the vibration ceases, that the bar becomes a permanent magnet.

9thly. An electric shock passing through a needle in a like position, and dilating it for an instant, renders it for the same reason a permanent magnet; that is, not by imparting magnetism to it, but by allowing its proper magnetic fluid to put itself in motion.

10thly. Thus there is not in reality more magnetism in a given piece of steel after it is become magnetic, than existed in it before. The natural quantity is only displaced or repelled.—Hence it follows that a strong apparatus of magnets may charge millions of bars of steel, without communicating to them any part of its proper magnetism; only putting in motion the magnetism which already existed in these bars.

I am chiefly indebted to that excellent philosopher of Petersburgh, M. Æpinus, for this hypothesis, which appears to me equally ingenious and solid. I say *chiefly*, because, as it is many years since I read his book, which I have

left in America, it may happen, that I may have added to or altered it in some respect; and if I have misrepresented any thing, the error ought to be charged to my account.

If this hypothesis appears admissible, it will serve as an answer to the greater part of your questions.—I have only one remark to add, which is, that however great the force is of magnetism employed, you can only convert a given portion of steel into a magnet of a force proportioned to its capacity of retaining its magnetic fluid in the new position in which it is placed, without letting it return. Now this power is different in different kinds of steel, but limited in all kinds whatever. B. FRANKLIN.

ON THE CHOICE OF GLASS FOR THE LEYDEN EXPERIMENT.

TO THE SAME.

SIR, *London, June* 1, 1773.

I wish, with you, that some chemist (who should, if possible, be at the same time an electrician), would, in pursuance of the excellent hints contained in your letter, undertake to work upon glass with the view which you have recommended. By means of a perfect knowledge of this substance, with respect to its electrical qualities, we might proceed with more certainty, as well in making our own experiments, as in repeating those which have been made by others in different countries, which I believe have frequently been attended with different success on account of differences in the glass employed, thence occasioning frequent misunderstandings and contrariety of opinions.

There is another circumstance much to be desired with respect to glass, and that is, that it should not be subject to break when highly charged in the Leyden experiment. I have known eight jars broken out of twenty, and, at another time, twelve out of thirty-five. A similar loss would greatly discourage electricians desirous of accumulating a great power for certain experiments.—We have never been able hitherto to account for the cause of such misfortunes. The first idea which occurs is, that the positive electricity being accumulated on one side of the glass, rushes violently through it, in order to supply the deficiency on the other side, and to restore the equilibrium. This, however, I cannot conceive to be the true reason, when I consider that a great number of jars being united, so as to be charged and discharged at the same time, the

breaking of a single jar will discharge the whole; for, if the accident proceeded from the weakness of the glass, it is not probable that eight of them should be precisely of the same degree of weakness, as to break every one at the same instant, it being more likely that the weakest should break first, and, by breaking, secure the rest; and again, when it is necessary to produce a certain effect, by means of the whole charge passing through a determined circle, (as, for instance, to melt a small wire,) if the charge, instead of passing in this circle, rushed through the sides of the jars, the intended effect would not be produced, which, however, is contrary to fact. For these reasons, I suspect, that there is, in the substance of the glass, either some little globules of air, or some portions of unvitrified sand or salt, into which a quantity of the electric fluid may be forced during the charge, and there retained till the general discharge; and that the force being suddenly withdrawn, the elasticity of the fluid acts upon the glass in which it is enclosed, not being able to escape hastily without breaking the glass. I offer this only as a conjecture, which I leave to others to examine.

The globe which I had which could not be excited, though it was from the same glass-house which furnished the other excellent globes in my possession, was not of the same frit. The glass which was usually manufactured there, was rather of the green kind, and chiefly intended for drinking-glasses and bottles; but the proprietors being desirous of attempting a trial of white glass, the globe in question was from this frit. The glass not being of a perfect white, the proprietors were dissatisfied with it, and abandoned their project.—I suspected that too great a quantity of salt was admitted into the composition; but I am no judge of these matters. B. FRANKLIN.

ON THE DEATH OF PERSONS STRUCK BY LIGHTNING.

SIR, TO THE SAME.

YOUR observations on the causes of death, and the experiments which you propose for recalling to life those who appear to be killed by lightning, demonstrate equally your sagacity and your humanity. It appears, that the doctrines of life and death, in general, are yet but little understood.

A toad buried in sand will live, it is said, till the sand becomes petrified; and then, being enclosed in the stone, it may still live, for we know not how

many ages. The facts which are cited in support of this opinion are too numerous, and too circumstantial, not to deserve a certain degree of credit. As we are accustomed to see all the animals with which we are acquainted, eat and drink, it appears to us difficult to conceive how a toad can be supported in such a dungeon: but, if we reflect, that the necessity of nourishment which animals experience in their ordinary state, proceeds from the continual waste of their substance by perspiration, it will appear less incredible, that some animals in a torpid state, perspiring less because they use no exercise, should have less need of aliment; and that others, which are covered with scales or shells, which stop perspiration, such as land and sea turtles, serpents, and some species of fish, should be able to subsist a considerable time without any nourishment whatever. A plant, with its flowers, fades and dies immediately, if exposed to the air without having its root immersed in a humid soil, from which it may draw a sufficient quantity of moisture to supply that which exhales from its substance, and is carried off continually by the air. Perhaps, however, if it were buried in quicksilver, it might preserve for a considerable space of time its vegetable life, its smell and color. If this be the case, it might prove a commodious method of transporting from distant countries those delicate plants which are unable to sustain the inclemency of the weather at sea, and which require particular care and attention.—I have seen an instance of common flies preserved in a manner somewhat similar. They had been drowned in Madeira wine, apparently about the time when it was bottled in Virginia, to be sent hither (to London). At the opening of one of the bottles, at the house of a friend where I then was, three drowned flies fell into the first glass which was filled. Having heard it remarked, that drowned flies were capable of being revived by the rays of the sun, I proposed making the experiment upon these: they were therefore exposed to the sun upon a sieve, which had been employed to strain them out of the wine. In less than three hours two of them began by degrees to recover life. They commenced by some convulsive motions in the thighs, and at length they raised themselves upon their legs, wiped their eyes with their fore-feet, beat and brushed their wings with their hind-feet, and soon after began to fly, finding themselves in Old England without knowing how they came thither. The third continued lifeless till sunset, when, losing all hopes of him, he was thrown away.

I wish it were possible, from this instance, to invent a method of embalming drowned persons, in such a manner that they might be recalled to life at any

period, however distant; for, having a very ardent desire to see and observe the state of America an hundred years' hence, I should prefer to any ordinary death, the being immersed in a cask of Madeira wine, with a few friends, till that time, to be then recalled to life by the solar warmth of my dear country! But since in all probability we live in an age too early and too near the infancy of science, to hope to see such an art brought in our time to its perfection, I must for the present content myself with the treat which you are so kind as to promise me, of the resurrection of a fowl or a turkey-cock. I am, &c.

B. FRANKLIN.

ON THE MODE OF RENDERING MEAT TENDER BY ELECTRICITY.

To MESSRS. DUBOURG AND D'ALIBARD.

MY DEAR FRIENDS,

My answer to your questions concerning the mode of rendering meat tender by electricity, can only be founded upon conjecture; for I have not experiments enough to warrant the facts. All that I can say at present is, that I think electricity might be employed for this purpose; and I shall state what follows as the observations or reasons which make me presume so.

It has been observed that lightning, by rarefying and reducing into vapor the moisture contained in solid wood, in an oak, for instance, has forcibly separated its fibres, and broken it into small splinters; that by penetrating completely the hardest metals, as iron, it has separated the parts in an instant, so as to convert a perfect solid into a state of fluidity: it is not then improbable, that the same subtile matter passing through the bodies of animals with rapidity, should possess sufficient force to produce an effect nearly similar.

The flesh of animals fresh killed in the usual manner is firm, hard, and not in a very eatable state, because the particles adhere too forcibly to each other. At a certain period the cohesion is weakened, and in its progress towards putrefaction, which tends to produce a total separation, the flesh becomes what we call tender, or is in that state most proper to be used as our food.

It has frequently been remarked, that animals killed by lightning putrefy immediately. This cannot be invariably the case, since a quantity of lightning sufficient to kill, may not be sufficient to tear and divide the fibres and particles of flesh, and reduce them to that tender state which is the prelude to putrefac-

tion. Hence it is that some animals killed in this manner will keep longer than others. But the putrefaction sometimes proceeds with surprising celerity. A respectable person assured me that he once knew a remarkable instance of this. A whole flock of sheep in Scotland being closely assembled under a tree, were killed by a flash of lightning; and it being rather late in the evening, the proprietor, desirous of saving something, sent persons early the next morning to flay them; but the putrefaction was such, and the stench so abominable, that they had not the courage to execute their orders, and the bodies were accordingly buried in their skins. It is not unreasonable to presume, that between the period of their death and that of their putrefaction, a time intervened in which the flesh might be only tender, and only sufficiently so to be served at table. Add to this, that persons who have eaten of fowls killed by our feeble imitation of lightning (electricity) and dressed immediately, have asserted that the flesh was remarkably tender.

The little utility of this practice has perhaps prevented its being much adopted. For though it sometimes happens that a company unexpectedly arriving at a country-house, or an unusual conflux of travellers in an inn, may render it necessary to kill a number of animals for immediate use; yet as travellers have commonly a good appetite, little attention has been paid to the trifling inconvenience of having their meat a little tough. As this kind of death is nevertheless more sudden, and consequently less severe than any other, if this should operate as a motive with compassionate persons to employ it for animals sacrificed for their use, they may conduct the process thus:

Having prepared a battery of six large glass jars, (each from 20 to 24 pints,) as for the Leyden experiment, and having established a communication, as usual, from the interior surface of each with the prime conductor; and having given them a full charge, (which with a good machine may be executed in a few minutes, and may be estimated by an electrometer,) a chain which communicates with the exterior of the jars must be wrapped round the thighs of the fowl; after which the operator, holding it by the wings turned back, and made to touch behind, must raise it so high that the head may receive the first shock from the prime conductor. The animal dies instantly. Let the head be immediately cut off to make it bleed, when it may be plucked and dressed immediately. This quantity of electricity is supposed sufficient for a turkey of ten pounds weight, and perhaps for a lamb. Experience alone will inform us of the requisite proportions for animals of different forms and ages. Probably not

less will be required to render a small bird which is very old tender, than for a larger one which is young. It is easy to furnish the requisite quantity of electricity, by employing a greater or less number of jars. As six jars, however, discharged at once, are capable of giving a very violent shock, the operator must be very circumspect, lest he should happen to make the experiment on his own flesh, instead of that of the fowl. B. FRANKLIN.

ON THE NATURE OF SEA-COAL.

To MONS. DUBOURG.

I AM persuaded as well as you, that the sea-coal has a vegetable origin, and that it has been formed near the surface of the earth; but as preceding convulsions of nature had served to bury it very deep in many places, and covered with many different strata, we are indebted to subsequent convulsions for having brought within our view the extremities of its veins, so as to lead us to penetrate the earth in search of it. I visited last summer a large coal-mine at Whitehaven in Cumberland; and in following the vein, and descending by degrees towards the sea, I penetrated below the ocean, where the level of its surface was more than 800 fathom above my head; and the miners assured me that their works extended some miles beyond the place where I then was, continually and gradually descending under the sea. The slate which forms the roof of this coal-mine is impressed in many places with the figures of leaves and branches of fearn, which undoubtedly grew at the surface, when the slate was in the state of sand on the banks of the sea. Thus it appears that this vein of coal has suffered a prodigious settlement. B. F.

ANSWER TO SOME INQUIRIES RESPECTING THE ART OF SWIMMING.

To THE SAME.

I AM apprehensive that I shall not be able to find leisure for making all the disquisitions and experiments which would be desirable on this subject. I must therefore content myself with a few remarks.

The specific gravity of some human bodies, in comparison with that of water,

has been examined by Mr. Robertson, in our Philosophical Transactions, vol. 50, page 30, for the year 1757.—He asserts that fat persons with small bones float most easily upon water.

The diving bell is also accurately described in our Transactions.

When a youth, I made two oval pallets, each about ten inches long, and six broad, with a hole for the thumb, in order to retain it fast in the palm of my hand. They much resembled a painter's pallets. In swimming I pushed the edges of these forward, and I struck the water with their flat surfaces as I drew them back. I remember I swam faster by means of these pallets, but they fatigued my wrists. I also fitted to the soles of my feet a kind of sandals, but I was not satisfied with them, because I observed that the stroke is partly given by the inside of the feet and the ancles, and not entirely with the soles of the feet.

We have here waistcoats for swimmers, which are made of double sail-cloth, with small pieces of cork quilted in between them.

I know nothing of the *scaphandre* of M. de la Chapelle.

I know by experience that it is a great comfort to a swimmer, who has a considerable distance to go, to turn himself sometimes on his back, and to vary in other respects the means of procuring a progressive motion.

When he is seized with the cramp in the leg, the method of driving it away is to give to the parts affected a sudden vigorous and violent shock, which he may do in the air as he swims on his back.

During the great heats of summer there is no danger in bathing, however warm we may be, in rivers which have been thoroughly warmed by the sun. But to throw one-self into cold spring water when the body has been heated by exercise in the sun, is an imprudence which may prove fatal. I once knew an instance of four young men, who having worked at harvest in the heat of the day, with a view of refreshing themselves plunged into a spring of cold water: two died upon the spot, a third the next morning, and the fourth recovered with great difficulty. A copious draught of cold water, in similar circumstances, is frequently attended with the same effect in North America.

The exercise of swimming is one of the most healthy and agreeable in the world. After having swam for an hour or two in the evening, one sleeps coolly the whole night, even during the most ardent heats of summer. Perhaps the pores being cleansed, the insensible perspiration increases and occasions this coolness. It is certain that much swimming is a means of stopping a diarrhœa, and even of producing a constipation. With respect to those who do not know

how to swim, or who are affected with a diarrhœa at a season which does not permit them to use that exercise, a warm bath, by cleansing and purifying the skin is found very salutary, and often effects a radical cure. I speak from my own experience frequently repeated, and that of others to whom I have recommended this.

You will not be displeased if I conclude these hasty remarks by informing you, that as the ordinary method of swimming is reduced to the act of rowing with the arms and legs, and is consequently a laborious and fatiguing operation when the space of water to be crossed is considerable; there is a method in which a swimmer may pass to great distances with much facility, by means of a sail:—this discovery I fortunately made by accident, and in the following manner:

When I was a boy, I amused myself one day with flying a paper kite; and approaching the bank of a pond which was near a mile broad, the weather being very warm, I tied the string to a stake, and the kite ascended to a very considerable height above the pond, while I was swimming. In a little time, being desirous of amusing myself with my kite, and enjoying at the same time the pleasure of swimming, I returned; and loosing from the stake the string with the little stick that was fastened to it, I went again into the water, where I found that lying on my back and holding the stick in my hands, I was drawn along the surface of the water in a very agreeable manner. Having then engaged another boy to carry my clothes round the pond to a place which I pointed out to him on the other side, I began to cross the pond with my kite, which carried me quite over without the least fatigue, and with the greatest pleasure imaginable. I was only obliged occasionally to halt a little in my course, and resist its progress, when it appeared that by following too quick I lowered the kite too much; by doing which occasionally, I made it rise again. I have never since that time practised this singular mode of swimming, though I think it not impossible to cross in this manner from Dover to Calais.—The packet boat, however, is still preferable. Yours, B. FRANKLIN.

STOVES FOR PUBLIC BUILDINGS.

Extract from a Letter to Dr. Cooper.

London, July 7, 1773.

"I congratulate you on the finishing of your new meeting-house. I have considered as well as I can, without being on the spot, the intention of warming

it by some machine in the cold damp seasons. It must be a matter of difficulty to warm sensibly all the air in so large and so lofty a room, especially if the fire is not kept up in it constantly on the week days as well as Sundays. For though the machine is very large and made very hot, yet the space of air and quantity of wall to be warmed is so great, that it must be long before any considerable effect will be produced. Then it will descend by the walls and windows, which being very cold by the preceding week's absence of fire, will cool that descending air so much in so long a descent, that it will fall very heavily and uncomfortably upon the heads of all that happened to sit under it, and will proceed in cold currents along the floor to the warming machine wherever it is situated. This must continue till the walls are warmed, for which I think one day is by no means sufficient, and that therefore a fire kindled in the morning of the Sabbath will afford no comfort to the congregation that day, except to a few that sit near it, and some inconvenience to the rest from the currents above-mentioned. If, however, your people, as they are rich, can afford it, and may be willing to indulge themselves, should choose to keep up a constant fire in the winter months, you may have from this country a machine for the purpose, cast from the same patterns with those now used at the Bank, or that in Lincoln's Inn Hall, which are placed in the middle of the respective rooms. The smoke of these descends, and passing under ground, rises in some chimney at a distance. Yours must be a chimney built, I suppose, without the house; and as it ought to draw well to prevent your being troubled with smoke (as they often are at the Bank), it should be on the south side; but this I fear would disfigure your front. That at Lincoln's Inn Hall draws better. They are in the form of temples, cast in iron, with columns, cornices, and every member of elegant architecture. And I mention casting them from the same patterns or moulds, because those being already made, a great deal of work and expense will thereby be saved. But if you can cast them in New England, a large vase, or an antique altar, which are more simple forms, may answer the purpose as well, and be more easily executed. Yet after all, when I consider the little effect I have observed from these machines in those great rooms, the complaints of people who have tried Buzaglo's stoves in halls, and how far your meeting-house must exceed them in all its dimensions, I apprehend, that after a great deal of expense, and a good deal of dust on the seats and in the pews, which they constantly occasion, you will not find your expectations answered. And persuaded as I am, from philosophic considerations, that *no one ever* catches the

disorder we call a cold from cold air, and therefore never at meeting, I should think it rather advisable to those who cannot well bear it, to guard against the short inconvenience of cold feet, (which only takes place towards the end of the service,) by basses or bear-skin cases to put the legs in, or by small stoves with a few coals under foot, *more majorum*.

Preparatory Notes and Hints for writing a Paper concerning what is called, CATCHING OF COLD.

DEFINITION OF A COLD.

It is a siziness and thickness of the blood, whereby the smaller vessels are obstructed, and the perspirable matter retained, which being retained offends both by its quantity and quality; by quantity, as it outfills the vessels, and by its quality, as part of it is acrid, and being retained, produces coughs and sneezing by irritation.

HOW THIS SIZINESS IS PRODUCED.

1. By being long exposed in a cold air, without exercise: cold thickens glue.

2. By a diminished perspiration, either (1) from breathing and living in moist air, or (2) from the clogging of the pores by clammy sweat dried on and fastening down the scales of the skin; or (3) by cold constringing the pores partially or totally, sleeping or waking; or (4) by having eat foods of too gross particles for free perspiration, as oysters, pork, ducks, &c. People are found frequently costive after much bathing.

3. By repletion, as when more is thrown into the habit by eating and drinking than common perspiration is capable of discharging in due time; whence the vessels are distended beyond their spring, and the quantity of contained fluid, that should be briskly moved to preserve or acquire a due thinness, is too weighty for their force, whence a slow motion,—thence viscidity. This repletion is increased by a constipation of the belly happening at the same time. In an approaching cold, more water is made than usual.

4. By cooling suddenly in the air after exercise. Exercise quickening the circulation, produces more perspirable matter in a given time, than is produced

in rest. And though more is likewise usually discharged during exercise, yet on sudden quitting of exercise, and standing in the air, the circulation and production of perspirable matter still continuing some time, the over quantity is retained. It is safer not to go into water too cold.

5. By particular effluvia in the air, from some unknown cause. General colds throughout a country. By being in a coach close, or small room with a person having a cold.

6. By relaxation of the solids, from a warm and moist air, so that they are too weak to give due motion to the fluids.

Of partial colds affecting parts only of the body.

Causes of feverishness attending colds.

Ill consequences often attending colds, as pleurisies, consumptions, &c. Some never taking cold, some frequently; cause of the difference.

Present remedies for a cold, should be warming, diluting, bracing.

Means of preventing cold; temperance, choice of meats and drinks, warm rooms, and lodging and clothing in winter; dry air, care to keep the belly open, and frequent discharge of water, warm bathing to cleanse the skin: rubbing after sweat, especially in the spring.

Difficulties that first put me on thinking on this subject. People get cold by less, and not by more, viz.

By putting on a damp shirt, on a dry body—Yes.

By putting on a dry shirt on a wet body, though this wets the shirt ten times more—No.

By sitting in a room, where the floor has been newly washed—Yes.

By going into a river, and staying there an hour (no sheets so wet)—No.

By wetting the feet only—Yes.

By wetting all the clothes through to the body, and wearing them a whole day—No.

By sitting in a room against a crevice—Yes.

By sitting as long in the open air—No.

Few of these effects take place, if the vessels are kept empty.

Reapers in Pennsylvania.

Drinking cold water when they are hot.

If it makes them sweat, they are safe,

If not they fall ill, and some die.

People hot, should drink by spoonfuls: the reason.

Taking cold. The disorder only called so in English and in no other language.

American Indians, in the woods, and the whites in imitation of them, lie with their feet to the fire in frosty nights, and *take no cold* while they can keep their feet warm.

Feet and hands apt to be cold in that disorder, and why. Is it the siziness, or the greater evaporation?

Hottentots grease themselves,—occasions other evacuations more plentiful. Greasing keeps the body warm. Bad to hold the water too long. Parts colder when first unclothed than afterwards, why?

It was a disgrace among the ancient Persians to cough or spit.

Probably as it argued intemperance.

Vessels when too full leak. Quicksilver through leather. Thin fluid leaked evaporates. Corners of eyes, &c. Sizy will not all evaporate. What is left corrupts. Hence consumptions. Hectic fevers, from absorption of putrid pus. It ferments the blood like yeast.

People seldom get cold at sea, though they sleep in wet clothes. Constant exercise, moderate living. Bad cooks. Yet air is very moist. Wet floors. Sea surrounding, &c.

Exercise cures a cold. Bishop Williams riding several times from London or Exeter, to Salisbury.

Bark good for a cold taken early.

Particular parts more accustomed to discharge the irritating perspirable matter, as under the arms in some, feet in others, &c.

Experiment of two razors.

Every pain or disorder now ascribed to a cold.

It is the covering excuse of all intemperance.

Numbers of people in a close room, and exercising there, fill the air with putrid particles.

People killed by House of Commons, breathing the air through holes in ceiling.

Think they get cold by coming *out* of such hot rooms; they get them by being *in*.

Those who live in hotter rooms (stoves) get no colds;

Germans and all the northern people.

Alderman and turtle.

People remark they were very well before a cold and eat hearty. Wonder how they catched it.

Signs of Temperance.

Mouth not clammy after sleep.
Saliva thin and watery.
Eyelids not stuck together with hard glue.
Voice clear.
No phlegm to raise.

Advice for mode of general temperance without appearing too singular.

Supper not bad after preparatory light dinner.
May be rectified by slight breakfast next morning.
He must be too full that one excess will much disorder.

Time of great meal mended of late.

One hour variation of compass in twenty years.

After dinner not fit for business.

People from the country get cold when they come to London, and why? Full living with moist air. London air generally moist, why? Much putrid air in London. Silver, &c.

Cooks and doctors should change maxims.

Common sense more common among the common Scotch.

Those who do not compare, cannot conceive the difference between themselves and themselves in full or spare living.

Wet newspapers, why give colds.

Old libraries, and damp old books.

Putrid animal matter in paper size.

Courts should not sit after dinner.

Juries fast, a good institution.

Chess—Impatience of deliberation because more difficult. Writing, &c.

Most follies arise from full feeding. Reasons *pro* and *con* not all present.

Temperate nations wisest.

Dining entertainments bad.

Remains of barbarism—expensive.

Full feeding of children stupifies.

Fasting strengthens reason rather than subdues passion.

People often do not get cold when they think they do, and do when they think they do not.

Causes of colds are primary and secondary.

Colds are of different kinds, putrid and plethoric.

Scarce any air abroad so unwholesome as air in a close room often breathed.

Warm air dissolves more moisture than cold.

In hot countries men wrap themselves in wet sheets to sleep.

A general service to redeem people from the slavish fear of getting cold, by showing them where the danger is not, and that where it is, 'tis in their power to avoid it.

Surfeit, an expression formerly used, now laid aside.

Costiveness occasioning colds, how to be prevented.

Colds formerly called rheums and catarrhs.

Particular foods said to engender rheums.

Quere. Is Mr. Wood more or less subject to catch cold since he betook himself to his low diet?

Answer (by Mr. Wood). He now finds himself *much more* healthy, and *much less* liable to catch cold. What few colds he now catches are so very slight that he is not sensible of them, but from the urine, which is then not so clear.

I caused the above question to be asked Mr. Wood, and obtained the answer. It is the Mr. Wood who lives upon a pound of flour in a pudding.

B. FRANKLIN.

Dampier, speaking of the customs of the people at Mindanoo, p. 330, says,

"You see abundance of people in the river from morning to night washing their bodies or clothes: they strip and stand naked till they have done; then put them on and march out again."

Dr. Gregory says,

All that class of diseases which arise from catching cold, is found only among the civilised part of mankind. An old Roman or an Indian, in the pursuit of war or hunting, would plunge into a river whilst in a profuse sweat, without fear, and without danger. The greater care we take to prevent catching cold,

by the various contrivances of modern luxury, the more we become subject to it. We can guard against cold only by rendering ourselves superior to its influence. There is a striking instance of this in the vigorous constitutions of children who go thinly clad in all seasons and weathers.

The coats of the vessels are a kind of network which contains the fluids only when not so pressed as to enlarge the pores of the net, or when the fluids are not so pressed as to break the cohesion of the globules or particles, so as to make them small enough to come through. When the vessels are full, occasioned by a course of full living, they labor in carrying on the circulation; their spring or power of contraction and compressing the fluids they contain, being overstrained, is weakened, the circulation proceeds more slowly, the fluids thicken and become more gluey, both for want of due churning and because less heat is produced in the body. Such a body requires more aid of clothing and fire to preserve its warmth.

If a person in that state of body walks a mile or two, or uses any other exercise that warms him, the fluids are rarefied by the heat, distend the vessels still more, and the thinner parts of the fluids in tender places force out through the pores of the vessels in form of a gluey water, viz. at the eyes, within the nose, and within the lungs. This in moderate exercise.

If the exercise is increased it comes through every pore in the skin, and is called sweat.

The more volatile parts of this extravasated fluid evaporate, and fly off in the air; the gluey part remains, thickens and hardens more or less, as it becomes more or less dry; in the nose and on the lungs where air is continually coming and going, it soon becomes a mucus, but can hardly grow drier because surrounded with moist parts and supplied with more moisture. What oozes out of the corner of the eye when shut, as in sleep, hardens into what is called a kind of gum, being in fact dry glue.

This in a morning almost sticks the eyelids together.

With such mucous matter the nose is sometimes almost stopped, and must be cleared by strong blowing.

In the wind-pipe and on the lungs it gathers and is impacted, so as sometimes to induce a continual coughing and hawking to discharge it.

If not easily discharged, but remaining long adhering to the lungs, it corrupts and inflames the parts it is in contact with; even behind the ears and between

the parts of the body so constantly in contact, that the perspirable matter, sweat, &c. cannot easily escape from between them; the skin is inflamed by it, and a partial putrefaction begins to take place, they corrupt and ulcerate. The vessels being thus wounded discharge greater and continual quantities. Hence consumptions.

Part of the corrupted matter absorbed again by the vessels and mixed with the blood, occasions hectic fevers.

When the body has sweated, not from a dissolution of fluids, but from the force above mentioned, as the sweat dries off, some clammy substance remains in the pores, which closes many of them, wholly or in part. The subsequent perspiration is hereby lessened.

The perspirable matter consists of parts approaching to putrefaction, and therefore destined by nature to be thrown off, that living bodies might not putrefy, which otherwise, from their warmth and moisture, they would be apt to do.

These corrupting particles, if continually thrown off, the remainder of the body continues uncorrupt, or approaches no nearer to a state of putrefaction. Just as in boiling water, no greater degree of heat than the boiling heat can be acquired, because the particles that grow hotter, as fast as they become so, fly off in vapor. But if the vapor could be retained, water might be made much hotter, perhaps red hot, as oil may, which is not so subject to evaporation. So if the perspirable matter is retained it remixes with blood, and produces first, a slight putrid fever, attending always what we call a cold, and when retained in a great degree, more mischievous putrid diseases.

In hot countries, exercise of body with the heat of the climate create much of this putrid perspirable matter, which ought to be discharged. A check is in those countries very pernicious; putrid malignant violent fevers, and speedy death, the consequence.

Its discharge is also checked another way besides that of closing the pores, viz. by being in an air already full of it, as in close rooms containing great numbers of people, play-houses, ball-rooms, &c.

For air containing a quantity of any kind of vapour, becomes thereby less capable of imbibing more of that vapour, and finally will take no more of it.

If the air will not take it off from the body, it must remain in the body; and the perspiration is as effectually stopped, and the perspirable matter as certainly retained as if the pores were all stopped.

A lock of wet wool contained in a nutmeg grater, may dry, parting with its moisture through the holes of the grater. But if you stop all those holes with wax it will never dry. Nor if exposed to the open air will it dry when the air is as moist as itself. On the contrary if already dry, and exposed to moist air, it would acquire moisture.

Thus people in rooms heated by a multitude of people, find their own bodies heated, thence the quantity of perspirable matter is increased that should be discharged, but the air not being changed grows so full of the same matter, that it will receive no more. So the body must retain it. The consequence is, that next day, perhaps sooner, a slight putrid fever comes on with all the marks of what we call a cold, and the disorder is supposed to be got by coming out of a warm room, whereas it was really taken while in that room.

Putrid ferments beget their like.—Small pox.—Wet rotten paper, containing corrupt glue. The cold fever communicable by the breath to others, &c.

Urine retained, occasions sneezing, &c.

Coughing and spitting continually, marks of intemperance.

People eat much more than is necessary.

Proportionable nourishment and strength is not drawn from great eating.

The succeeding meals force the preceding through half-undigested.

Small meals continue longer in the body, and are more thoroughly digested.

The vessels being roomy can bear and receive without hurt an accidental excess.

They can concrete more easily.

There is less quantity of corrupting particles produced.

Putrid fish very bad.

Black hole in the Indies.

LETTER FROM MR. W. SMALL TO DR. FRANKLIN.

DEAR SIR, *Birmingham, 10th August*, 1771.

The reason of your having no sooner received the quotation from Celsus, is, that I wished to employ my very first leisure in looking into several other ancient books for passages to the same purpose and to send you all together. But Mr. Keir having told me of your desire to see that immediately, you have it almost alone.

In the article De Tabe in his third book, treating of the cure he says "cavendæ *distillationes*, ne, si quid cura levarit, exasperent; et *ob id*, *vitanda cruditas*, simulque et sol, et frigus."[1] Here indigestion seems to be reckoned the principal cause. If you have not attended to that particular before, you may be surprised to find sunshine among the causes of colds, but such is the doctrine of all the ancients. A passage about the instruments of cure in coughs may perhaps amuse you, "Utilis etiam in omni tussi est peregrinatio, navigatio longa, loca maritima, *natationes*."[2]

From several things in Xenophon, and in Plato, the prevailing opinion in their time seems to have been, that what we now commonly call colds and catarrhs, arose almost solely from excess and indolence. On this account Xenophon says, that in Persia in the days of Cyrus, to spit or to blow a nose was infamous. Plato often commends simple spare diet, but in one place he says it prevents all *catarrhs*. Whether he means precisely what we call catarrhs, however, in that passage, may be doubted.

I do not recollect any absolutely express testimony in your favor from Hippocrates. Mucus (of the nose) and saliva he judges to be signs of repletion, and he maintains that persons who drink and eat sparingly are free from diseases occasioned by moisture. Abundance may be found in Galen to your purpose. A modern author, who ought to have understood this subject, for he has written so great a book about catarrhs[3] that you had better have twenty colds than read it, is of your opinion. "Illa, illa, inquam, cibi potusque abundantia citat catarrhos. Eosdem abigunt frugalitas et labor. Ut ex luxu et otio nascuntur catarrhi, ita horum medicina est in sobrietate, in continentia, in exercitationibus corporis, in mentis tranquillitate. Quotusquisque vero hæc præcepta, has leges vivendi custodit? Homo frugi est rara avis, &c. *Hinc* nemo mortalium fere est sine catarrhis."[4]

---

[1] "Great caution should be observed, when relief is once obtained, lest Catarrhs are made worse; indigestion also, as well as exposure to the sun, and cold air, ought to be avoided."

[2] "In all coughs it is found beneficial to take long journeys and voyages, to reside on the sea-coast, and to use sea-baths."

[3] This book upon the Catarrh is probably that of *Schneiderus*, consisting of four volumes 4to.

[4] "Eating and drinking too much, is sufficient of itself, I say, to produce Catarrhs. Temperance and active pursuits on the contrary drive them away. As Catarrhs are produced by luxury and indolence, so the remedy for these is to observe sobriety, continence, exercise of body and tranquillity of mind. How few observe these precepts? Temperance indeed is very rare. Hence very few escape Catarrhs."

Mr. Boulton will soon present you with one of the boxes with invisible hinges. He has astonished our rural philosophers exceedingly by calming the waves *à la Franklin.*[1]

I am trying some experiments in relation to the improvement of telescopes; should they answer you shall hear of them.

I beg you will make my most respectful compliments to the fellow travellers who were with you here, and believe me to be with the highest regard, dear Sir, your much obliged and most obedient servant, W. SMALL.

ON THE CAUSES OF COLDS.

March 10, 1773.

* * * * * I shall not attempt to explain why damp clothes occasion colds, rather than wet ones, because I doubt the fact; I imagine that neither the one nor the other contribute to this effect, and that the causes of colds are totally independent of wet and even of cold. I propose writing a short paper on this subject, the first moment of leisure I have at my disposal. In the mean time I can only say, that having some suspicions that the common notion, which attributes to cold the property of stopping the pores and obstructing perspiration, was ill founded. I engaged a young physician, who is making some experiments with Sanctorius's balance, to estimate the different proportions of his perspiration, when remaining one hour quite naked, and another warmly clothed. He pursued the experiment in this alternate manner for eight hours successively, and found his perspiration almost double during those hours in which he was naked. B. FRANKLIN.

May 4, 1773.

The young physician whom I mentioned is dead, and all the notes which he had left of his curious experiments are by some accident lost between our friends Sir John Pringle and Dr. Huck (Saunders); but these gentlemen, if the papers

[1] See WRITINGS, Part IV.

cannot be recovered, it is to be presumed, will repeat the experiments themselves.[1]

To Dr. Rush.

Dear Sir, *London, July* 14, 1773.

I received your favor of May 1 with the pamphlet, for which I am obliged to you. It is well written. I hope that in time the endeavors of the friends to liberty and humanity will get the better of a practice that has so long disgraced our nation and religion.

A few days after I received your packet for M. Dubourg, I had an opportunity of forwarding it to him per M. Poissonier, physician of Paris, who kindly undertook to deliver it. M. Dubourg has been translating my book[2] into French. It is nearly printed, and he tells me he purposes a copy for you.

I shall communicate your judicious remark relating to the septic quality of the air transpired by patients in putrid diseases to my friend Dr. Priestly. I hope that after having discovered the benefit of fresh and cool air applied to the sick, people will begin to suspect that possibly it may do no harm to the well. I have not seen Dr. Cullen's book, but am glad to hear that he speaks of catarrhs or colds by contagion. I have long been satisfied from observation, that besides the general colds now termed *influenzas* (which may possibly spread by contagion as well as by a particular quality of the air) people often catch cold from one another when shut up together in close rooms, coaches, &c. and when sitting near and conversing so as to breathe in each other's transpiration; the disorder being in a certain state. I think too that it is the frowzy corrupt air from animal substances, and the perspired matter from our bodies, which being long confined in beds not lately used, and clothes not lately worn, and books long shut up in close rooms, obtains that kind of putridity which occasions the colds observed upon sleeping in, wearing, and turning over such bed, clothes, or books, and not their coldness or dampness. From these causes, but more from too full living, with too little exercise, proceed in my opinion most of the disorders which for about one hundred and fifty years past

---

[1] The young physician here alluded to, is the late Dr. Stark, whose works, including the above experiments, have since been published.

[2] Experiments in electricity.

the English have called *colds*. As to Dr. Cullen's cold or catarrh *a frigore*, I question whether such a one ever existed. Travelling in our severe winters, I have suffered cold sometimes to an extremity only short of freezing, but this did not make me *catch cold*. And for moisture, I have been in the river every evening two or three hours for a fortnight together, when one would suppose I might imbibe enough of it to *take cold* if humidity could give it; but no such effect ever followed. Boys never get cold by swimming. Nor are people at sea, or who live at Bermudas, or St. Helena, small islands, where the air must be ever moist from the dashing and breaking of waves against their rocks on all sides, more subject to colds than those who inhabit part of a continent where the air is driest. Dampness may indeed assist in producing putridity and those miasmata which infect us with the disorder we call a cold; but of itself can never by a little addition of moisture hurt a body filled with watery fluids from head to foot. With great esteem and sincere wishes for your welfare, I am, Sir, your most obedient humble servant, B. FRANKLIN.

MOIST AIR NOT UNHEALTHY.

To Dr. Percival.

London, Oct. 15, 1773.

* * * * * *

—— "The difference of deaths between 1 in 28 at Manchester, and 1 in 120 at Morton, is surprising. It seems to show the unwholesomeness of the manufacturing life, owing perhaps to the confinement in small close rooms, or in larger with numbers, or to poverty and want of necessaries, or to drinking, or to all of them. Farmers who manufacture in their own families what they have occasion for and no more, are perhaps the happiest people and the healthiest.

'Tis a curious remark, that moist seasons are the healthiest. The gentry of England are remarkably afraid of moisture, and of air. But seamen, who live in perpetually moist air, are always healthy, if they have good provisions. The inhabitants of Bermuda, St. Helena, and other islands far from continents, surrounded with rocks against which the waves continually dashing fill the air with spray and vapor, and where no wind can arrive that does not pass over much sea, and of course bring much moisture, these people are remarkably healthy. And I have long thought that mere moist air has no ill effect on the

constitution; though air impregnated with vapors from putrid marshes is found pernicious, not from the moisture but the putridity. It seems strange that a man, whose body is composed in great part of moist fluids, whose blood and juices are so watery, who can swallow quantities of water and small beer daily without inconvenience, should fancy that a little more or less moisture in the air should be of such importance. But we abound in absurdity and inconsistency. Thus though it is generally allowed that *taking the air* is a good thing, yet what caution against air! what stopping of crevices! what wrapping up in warm clothes! what stuffing of doors and windows! even in the midst of summer. Many London families go out once a day to take the air; three or four persons in a coach, one perhaps sick; these go three or four miles, or as many turns in Hyde Park, with the glasses both up close, all breathing over and over again the same air they brought out of town with them in the coach, with the least change possible, and rendered worse and worse every moment. And this they call *taking the air*. From many years observations on myself and others, I am persuaded we are on a wrong scent in supposing moist or cold air the causes of that disorder we call *a cold*: some unknown quality in the air may perhaps produce colds, as in the *influenza*; but generally I apprehend they are the effect of too full living in proportion to our exercise. Excuse, if you can, my intruding into your province, and believe me ever with sincere esteem, dear sir, your most obedient humble servant, B. FRANKLIN.

ON LIGHTNING CONDUCTORS.

To Mr. WINTHROP.

London, July 25, 1773.

* * * * Your remark on the passage of Castillioneus will be read at the society at their next meeting. I thank you much for the papers and accounts of damage done by lightning, which you have favored me with. The conductors begin to be used here. Many country seats are provided with them, some churches, the powder magazines at Purfleet, the queen's house in the park, &c. and M. Le Roy of the Academy of Sciences at Paris, has lately given a Memoir recommending the use of them in that kingdom, which has

been long opposed and obstructed by Abbé Nollet. Of the Duke of Tuscany he says, "Ce prince, qui ne connoît pas de délassement plus agréable des soins pénibles du gouvernement, que l'étude de la Physique, a ordonné, l'année dernière, qu'on établît de ces barres au-dessus de tous les magasins à poudre de ses Etats; on dit que la république de Venise a donné les mêmes ordres, &c."

B. FRANKLIN.

OF THE STILLING OF WAVES BY MEANS OF OIL.

EXTRACTED FROM SUNDRY LETTERS BETWEEN DR. FRANKLIN, WILLIAM BROWNRIGG, M.D. F.R.S. AND THE REV. MR. FARISH.

Extract of a Letter from Dr. Brownrigg to Dr. Franklin, dated Ormathwait, January 27, 1773.

BY the enclosed from an old friend, a worthy clergyman at Carlisle, whose great learning and extensive knowledge in most sciences would have more distinguised him, had he been placed in a more conspicuous point of view, you will find, that he had heard of your experiment on Derwent Lake, and has thrown together what he could collect on that subject; to which I have subjoined one experiment from the relation of another gentleman.

Extract of a Letter from the Rev. Mr. Farish to Dr. Brownrigg.

I some time ago met with Mr. Dun, who surprised me with an account of an experiment you had tried upon the Derwent water, in company with Sir John Pringle and Dr. Franklin. According to his representation, the water, which had been in a great agitation before, was instantly calmed upon pouring in only a very small quantity of oil, and that to so great a distance round the boat as seemed incredible. I have since had the same accounts from others, but I suspect all of a little exaggeration. Pliny mentions this property of oil as known particularly to the divers, who made use of it in his days, in order to

have a more steady light at the bottom.[1] The sailors, I have been told, have observed something of the same kind in our days, that the water is always remarkably smoother, in the wake of a ship that has been newly tallowed, than it is in one that is foul. Mr. Pennant also mentions an observation of the like nature made by the seal-catchers in Scotland. *Brit. Zool.* Vol. IV. *Article* Seal. When these animals are devouring a very oily fish, which they always do under water, the waves above are observed to be remarkably smooth, and by this mark the fishermen know where to look for them. 'Old Pliny does not usually meet with all the credit I am inclined to think he deserves. I shall be glad to have an authentic account of the Keswick experiment; and if it comes up to the representations that have been made of it, I shall not much hesitate to believe the old gentleman in another more wonderful phenomenon he relates of stilling a tempest only by throwing up a little vinegar into the air

Dr. Franklin to Dr. Brownrigg.

Dear Sir, *London, Nov. 7, 1773.*

I thank you for the remarks of your learned friend at Carlisle: I had, when a youth, read and smiled at Pliny's account of a practice among the seamen of his time, to still the waves in a storm by pouring oil into the sea; which he mentions, as well as the use of oil by the divers; but the stilling a tempest by throwing vinegar into the air had escaped me. I think with your friend, that it has been of late too much the mode to slight the learning of the ancients. The learned, too, are apt to slight too much the knowledge of the vulgar. The cooling by evaporation was long an instance of the latter. This art of smoothing the waves by oil is an instance of both.

Perhaps you may not dislike to have an account of all I have heard, and learnt, and done in this way. Take it, if you please, as follows:

Note by Dr. Brownrigg.

[1] Sir Gilfred Lawson, who served long in the army at Gibraltar, assures me, that the fishermen in that place are accustomed to pour a little oil on the sea, in order to still its motion, that they may be enabled to see the oysters lying at its bottom, which are there very large, and which they take up with a proper instrument. This Sir Gilfred had often seen this performed, and said the same was practised on other parts of the Spanish coast.

In 1757, being at sea in a fleet of 96 sail, bound against Louisbourg, I observed the wakes of two of the ships to be remarkably smooth, while all the others were ruffled by the wind, which blew fresh. Being puzzled with the differing appearance, I at last pointed it out to our captain, and asked him the meaning of it. "The cooks," says he, "have, I suppose, been just emptying their greasy water through the scuppers, which has greased the sides of those ships a little;" and this answer he gave me with an air of some little contempt, as to a person ignorant of what every body else knew. In my own mind I at first slighted his solution, though I was not able to think of another; but recollecting what I had formerly read in Pliny, I resolved to make some experiment of the effect of oil on water, when I should have opportunity.

Afterwards being again at sea in 1762, I first observed the wonderful quietness of oil on agitated water, in the swinging glass lamp I made to hang up in the cabin, as described in my printed paper.[1] This I was continually looking at and considering, as an appearance to me inexplicable. An old sea captain, then a passenger with me, thought little of it, supposing it an effect of the same kind with that of oil put on water to smooth it, which he said was a practice of the Bermudians, when they would strike fish, which they could not see if the surface of the water was ruffled by the wind. This practice I had never before heard of, and was obliged to him for the information; though I thought him mistaken as to the sameness of the experiment, the operations being different as well as the effects. In one case, the water is smooth till the oil is put on, and then becomes agitated. In the other it is agitated before the oil is applied, and then becomes smooth. The same gentleman told me, he had heard it was a practice with the fishermen of Lisbon, when about to return into the river, (if they saw before them too great a surf upon the bar, which they apprehended might fill their boats in passing,) to empty a bottle or two of oil into the sea, which would suppress the breakers, and allow them to pass safely. A confirmation of this I have not since had an opportunity of obtaining; but discoursing of it with another person, who had often been in the Mediterranean, I was informed, that the divers there, who, when under water in their business, need light, which the curling of the surface interrupts by the refractions of so many little waves, let a small quantity of oil now and then out of their mouths, which rising to the surface smooths it, and permits the light to come down to them.

[1] See the preceding paper.

All these informations I at times revolved in my mind, and wondered to find no mention of them in our books of experimental philosophy.

At length being at Clapham, where there is, on the common, a large pond, which I observed one day to be very rough with the wind, I fetched out a cruet of oil, and dropped a little of it on the water. I saw it spread itself with surprising swiftness upon the surface; but the effect of smoothing the waves was not produced: for I had applied it first on the leeward side of the pond, where the waves were largest, and the wind drove my oil back upon the shore. I then went to the windward side, where they began to form; and there the oil, though not more than a tea-spoonful, produced an instant calm over a space several yards square, which spread amazingly, and extended itself gradually till it reached the lee side, making all that quarter of the pond, perhaps half an acre, as smooth as a looking-glass.

After this I contrived to take with me, whenever I went into the country, a little oil in the upper hollow joint of my bamboo cane, with which I might repeat the experiment as opportunity should offer; and I found it constantly to succeed.

In these experiments, one circumstance struck me with particular surprise. This was the sudden, wide, and forcibly spreading of a drop of oil on the face of the water, which I do not know that any body has hitherto considered. If a drop of oil is put on a highly polished marble table, or on a looking-glass that lies horizontally, the drop remains in its place, spreading very little. But when put on water, it spreads instantly many feet round, becoming so thin as to produce the prismatic colors, for a considerable space, and beyond them so much thinner as to be invisible, except in its effect of smoothing the waves at a much greater distance. It seems as if a mutual repulsion between its particles took place as soon as it touched the water, and a repulsion so strong as to act on other bodies swimming on the surface, as straw, leaves, chips, &c. forcing them to recede every way from the drop, as from a centre, leaving a large clear space. The quantity of this force, and the distance to which it will operate, I have not yet ascertained; but I think it a curious inquiry, and I wish to understand whence it arises.

In our journey to the north, when we had the pleasure of seeing you at Ormathwaite, we visited the celebrated Mr. Smeaton, near Leeds. Being about to show him the smoothing experiment on a little pond near his house, an ingenious pupil of his, Mr. Jessop, then present, told us of an odd appearance on

that pond, which had lately occurred to him. He was about to clean a little cup in which he kept oil, and he threw upon the water some flies that had been drowned in the oil. These flies presently began to move, and turned round on the water very rapidly, as if they were vigorously alive, though on examination he found they were not so. I immediately concluded that the motion was occasioned by the power of the repulsion above mentioned, and that the oil issuing gradually from the spungy body of the fly continued the motion. He found some more flies drowned in oil, with which the experiment was repeated before us. To show that it was not any effect of life recovered by the flies, I imitated it by little bits of oiled chips and paper cut in the form of a comma, of the size of a common fly; when the stream of repelling particles issuing from the point made the comma turn round the contrary way. This is not a chamber experiment; for it cannot be well repeated in a bowl or dish of water on a table. A considerable surface of water is necessary to give room for the expansion of a small quantity of oil. In a dish of water, if the smallest drop of oil be let fall in the middle, the whole surface is presently covered with a thin greasy film proceeding from the drop; but as soon as that film has reached the sides of the dish, no more will issue from the drop, but it remains in the form of oil, the sides of the dish putting a stop to its dissipation by prohibiting the farther expansion of the film.

Our friend, Sir John Pringle, being soon after in Scotland, learned there, that those employed in the herring fishery could at a distance see where the shoals of herrings were, by the smoothness of the water over them, which might possibly be occasioned, he thought, by some oiliness proceeding from their bodies.

A gentleman from Rhode Island told me, it had been remarked, that the harbor of Newport was ever smooth while any whaling vessels were in it: which probably arose from hence, that the blubber which they sometimes bring loose in the hold, or the leakage of their barrels, might afford some oil, to mix with that water, which from time to time they pump out to keep their vessel free, and that some oil might spread over the surface of the water in the harbor, and prevent the forming of any waves.

This prevention I would thus endeavor to explain.

There seems to be no natural repulsion between water and air, such as to keep them from coming into contact with each other. Hence we find a quantity of air in water; and if we extract it by means of the air-pump, the same water, again exposed to the air, will soon imbibe an equal quantity.

Therefore air in motion, which is wind, in passing over the smooth surface of water, may rub, as it were, upon that surface, and raise it into wrinkles, which if the wind continues, are the elements of future waves.

The smallest wave once raised does not immediately subside, and leave the neighboring water quiet; but in subsiding raises nearly as much of the water next to it, the friction of the parts making little difference. Thus a stone dropped in a pool raises first a single wave round itself; and leaves it, by sinking to the bottom; but that first wave subsiding raises a second, the second a third, and so on in circles to a great extent.

A small power continually operating will produce a great action. A finger applied to a weighty suspended bell can at first move it but little; if repeatedly applied, though with no greater strength, the motion increases till the bell swings to its utmost height, and with a force that cannot be resisted by the whole strength of the arm and body. Thus the small first-raised waves, being continually acted upon by the wind, are, though the wind does not increase in strength, continually increased in magnitude, rising highly and extending their bases, so as to include a vast mass of water in each wave, which in its motion acts with great violence.

But if there be a mutual repulsion between the particles of oil, and no attraction between oil and water, oil dropped on water will not be held together by adhesion to the spot whereon it falls; it will not be imbibed by the water; it will be at liberty to expand itself; and it will spread on a surface that, besides being smooth to the most perfect degree of polish, prevents, perhaps by repelling the oil, all immediate contact, keeping it at a minute distance from itself: and the expansion will continue till the mutual repulsion between the particles of the oil is weakened and reduced to nothing by their distance.

Now I imagine that the wind, blowing over water thus covered with a film of oil, cannot easily *catch* upon it, so as to raise the first wrinkles, but slides over it, and leaves it smooth as it finds it. It moves a little the oil indeed; which being between it and the water, serves it to slide with, and prevents friction, as oil does between those parts of a machine, that would otherwise rub hard together. Hence the oil dropped on the windward side of a pond proceeds gradually to leeward, as may be seen by the smoothness it carries with it, quite to the opposite side. For the wind being thus prevented from raising the first wrinkles, that I call the elements of waves, cannot produce waves, which are to be made by continually acting upon, and enlarging those elements, and thus the whole pond is calmed.

Totally therefore we might suppress the waves in any required place, if we could come at the windward place where they take their rise. This in the ocean can seldom if ever be done. But perhaps something may be done on particular occasions, to moderate the violence of the waves when we are in the midst of them, and prevent their breaking where that would be inconvenient.

For when the wind blows fresh, there are continually rising on the back of every great wave a number of small ones, which roughen its surface, and give the wind hold, as it were, to push it with greater force. This hold is diminished, by preventing the generation of those small ones. And possibly too, when a wave's surface is oiled, the wind, in passing over it, may rather in some degree press it down, and contribute to prevent it rising again, instead of promoting it.

This as mere conjecture would have little weight, if the apparent effects of pouring oil into the midst of waves were not considerable, and as yet not otherwise accounted for,

When the wind blows so fresh, as that the waves are not sufficiently quick in obeying its impulse, their tops being thinner and lighter are pushed forward, broken, and turned over in a white foam. Common waves lift a vessel without entering it; but these when large sometimes break above and pour over it, doing great damage.

That this effect might in any degree be prevented, or the height and violence of waves in the sea moderated, we had no certain account; Pliny's authority for the practice of seamen in his time being slighted. But discoursing lately on this subject with his excellency Count Bentinck, of Holland, his son the honorable captain Bentinck, and the learned professor Allemand, (to all whom I showed the experiment of smoothing in a windy day the large piece of water at the head of the Green Park), a letter was mentioned, which had been received by the count from Batavia, relative to the saving of a Dutch ship in a storm by pouring oil into the sea. I much desired to see that letter; and a copy of it was promised me, which I afterward received, and is as follows:

Extract of a letter from Mr. Tengnagel to Count Bentinck, dated at Batavia, the 5th of January, 1770.

" Near the islands Paul and Amsterdam, we met with a storm, which had nothing particular in it worthy of being communicated to you, except that the captain found himself obliged, for greater safety in wearing the ship, to pour oil into the sea, to prevent the waves breaking over her, which had an excellent effect, and succeeded in preserving us. As he poured out but a little at a time,

the East India Company owes perhaps its ship to only six demi-ames of olive-oil. I was present upon deck when this was done; and I should not have mentioned this circumstance to you, but that we have found people so prejudiced against the experiment, as to make it necessary for the officers on board and myself to give a certificate of the truth on this head, of which we made no difficulty."

On this occasion, I mentioned to captain Bentinck, a thought which had occurred to me in reading the voyages of our late circumnavigators, particularly where accounts are given of pleasant and fertile islands which they much desired to land upon, when sickness made it more necessary, but could not effect a landing through a violent surf breaking on the shore, which rendered it impracticable. My idea was, that possibly by sailing to and fro at some distance from such lee-shore, continually pouring oil into the sea, the waves might be so much depressed and lessened before they reach the shore, as to abate the height and violence of the surf, and permit a landing; which, in such circumstances, was a point of sufficient importance to justify the expense of the oil that might be requisite for the purpose. That gentleman, who is ever ready to promote what may be of public utility, though his own ingenious inventions have not always met with the countenance they merited, was so obliging as to invite me to Portsmouth, where an opportunity would probably offer, in the course of a few days, of making the experiment on some of the shores about Spithead, in which he kindly proposed to accompany me, and to give assistance with such boats as might be necessary. Accordingly, about the middle of October last, I went with some friends to Portsmouth: and a day of wind happening, which made a lee-shore between Hasler Hospital and the point near Jillkecker, we went from the Centaur with the long-boat and barge towards that shore. Our disposition was this: the long-boat was anchored about a quarter of a mile from the shore; part of the company were landed behind the point, (a place more sheltered from the sea,) who came round and placed themselves opposite to the long-boat, where they might observe the surf, and note if any change occurred in it upon using the oil. Another party, in the barge, plied to windward of the long-boat, as far from her as she was from the shore, making trips of about half a mile each, pouring oil continually out of a large stone bottle, through a hole in the cork, somewhat bigger than a goose-quill. The experiment had not, in the main point, the success we wished, for no material difference was observed in the height or force of the surf upon

the shore; but those who were in the long-boat could observe a tract of smoothed water, the whole of the distance in which the barge poured the oil, and gradually spreading in breadth towards the long-boat. I call it smoothed, not that it was laid level; but because, though the swell continued, its surface was not roughened by the wrinkles, or smaller waves, before mentioned; and none or very few white caps (or waves whose tops turn over in foam,) appeared in that whole space, though to windward and leeward of it there were plenty; and a wherry, that came round the point under sail, in her way to Portsmouth, seemed to turn into that tract in preference, and to use it from end to end, as a piece of turnpike-road.

It may be of use to relate the circumstances of an experiment that does not succeed, since they may give hints of amendment in future trials: it is therefore I have been thus particular. I shall only add what I apprehend may have been the reason of our disappointment.

I conceive, that the operation of oil on water is, first, to prevent the raising of new waves by the wind; and, secondly, to prevent its pushing those before raised with such force, and consequently their continuance of the same repeated height, as they would have done, if their surface were not oiled. But oil will not prevent waves being raised by another power, by a stone, for instance, falling into a still pool; for they then rise by the mechanical impulse of the stone, which the greasiness on the surrounding water cannot lessen or prevent, as it can prevent the winds catching the surface and raising it into waves. Now waves once raised, whether by the wind or any other power, have the same mechanical operation, by which they continue to rise and fall, as a *pendulum* will continue to swing, a long time after the force ceases to act by which the motion was first produced: that motion will, however, cease in time; but time is necessary. Therefore, though oil spread on an agitated sea may weaken the push of the wind on those waves whose surfaces are covered by it, and so, by receiving fresh impulse, they may gradually subside; yet a considerable time, or a distance through which they will take time to move, may be necessary to make the effect sensible on any shore in a diminution of the surf: for we know, that when wind ceases suddenly, the waves it has raised do not as suddenly subside, but settle gradually, and are not quite down till after the wind has ceased. So though we should, by oiling them, take off the effect of wind on waves already raised, it is not to be expected that those waves should be instantly levelled. The motion they have received, will for some time con-

tinue; and if the shore is not far distant, they arrive there so soon, that their effect upon it will not be visibly diminished. Possibly, therefore, if we had begun our operations at a greater distance, the effect might have been more sensible. And perhaps we did not pour oil in sufficient quantity. Future experiments may determine this.

I was, however, greatly obliged to captain Bentinck, for the cheerful and ready aids he gave me: and I ought not to omit mentioning Mr. Banks, Dr. Solander, General Cardac, and Dr. Blagden, who all assisted at the experiment, during that blustering unpleasant day, with a patience and activity that could only be inspired by a zeal for the improvement of knowledge, such especially as might possibly be of use to men in situations of distress.

I would wish you to communicate this to your ingenious friend, Mr. Farish, with my respects: and believe me to be, with sincere esteem, dear sir, your most obedient humble servant, B. FRANKLIN.

AN ATTEMPT TO EXPLAIN THE EFFECTS OF LIGHTNING,

ON THE VANE OF THE STEEPLE OF A CHURCH IN CREMONA, AUGUST, 1777.

To DR. JOHN INGENHAUSZ.

1. When the subtile fluid which we call fire or heat enters a solid body, it separates the particles of which that body consists farther from each other, and thus dilates the body, increasing its dimensions.

2. A greater proportion of fire introduced separates the parts so far from each other that the solid body becomes a fluid being melted.

3. A still greater quantity of heat separates the parts so far, that they lose their mutual attraction, and acquire a mutual repulsion, whence they fly from each other, either gradually, or suddenly with great force, as the separating power is introduced gradually or suddenly.

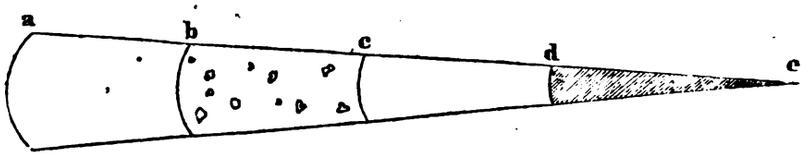
4. Thus ice becomes water, and water vapor, which vapor is said to expand to 14,000 times the space it occupied in the form of water, and with an explosive force in certain cases capable of producing great and violent effects.

5. Thus metals expand, melt, and explode. The two first effected by the gradual application of the separating power, and all three, in its sudden application by artificial electricity, or lightning.

6. That fluid in passing through a metal rod or wire is generally supposed to occupy the whole dimension of the rod. If the rod is smaller in some places than in others, the quantity of fluid which is not sufficient to make any change in the larger or thicker part, may be sufficient to expand, melt or explode the smaller, the quantity of fluid passing, being the same, and the quantity of matter less that is acted upon.

7. Thus the links of a brass chain, with a certain quantity of electricity passing through them have been melted in the small parts that form their contact, while the rest have not been affected.

8. Thus a piece of tin foil cut in this form, enclosed in a pack of cards,



and having the charge of a large bottle sent through it, has been found unchanged in the broadest part between a and b, melted only in spots between c and d, and the part between d and e reduced to smoke by explosion.

9. The tin foil melted in spots between b and c, and that whole space not being melted, seems to indicate that the foil in the melted parts had been thinner than the rest, on which thin parts the passing fluid had therefore a greater effect.

10. Some metals melt more easily than others. Tin more easily than copper, copper than iron. It is supposed (perhaps not yet proved) that those which melt with the least of the separating power, whether that be common fire or the electric fluid, do also explode with less of that power.

11. The explosions of metal like those of gun-powder act in all directions. Thus the explosion of gold leaf between plates of glass breaking the glass to pieces, will throw those pieces into all parts of the room, and the explosion of iron or even of water between the joints of stone in a steeple, will scatter the stones in all directions round the neighborhood. But the directions given to those stones by the explosion, is to be considered as different from the direction of the lightning which happened to occasion those explosions of the matter it met with in its passage between the clouds and the earth.

12. When bodies positively electrised approach sharp pointed rods or thin plates of metal, these are more easily rendered negative by the repulsive force

of the electric fluid in those positively electrised bodies, which chases away the natural quantity contained in those mince rods or plates, though it would not have force enough to chase the same out of larger masses. Hence such points, rods and plates being in a negative state, draw to themselves more strongly and in greater quantities the electric fluid offered them, than such masses can do which remain nearly in their natural state. And thus a pointed rod receives not only at its point though more visibly there, but at all parts of its length that are exposed. Hence a needle held between the finger and thumb, and presented to a charged prime conductor, will draw off the charge more expeditiously if held near the eye, and the rest of its length is exposed to the electrical atmosphere, than if all but half an inch of the point is concealed and covered.

13. Lightning so differs from solid projectiles, and from common fluids projected with violence, that though its course is rapid, it is most easily turned to follow the direction of good conductors. And it is doubted whether any experiments in electricity have yet decisively proved, that the electric fluid in its violent passage through the air where a battery is discharged has what we call a momentum, which would make it continue its course in a right line, though a conductor offered near that course to give it a different, or even contrary direction; or that it has a force capable of pushing forward, or overthrowing the objects it strikes against, even though it sometimes pierces them. Does not this seem to indicate that the perforation is not made by the force of a projectile passing through, but rather by the explosion or the dilatation in passing, of a subtile line of fluid?

14. Such an explosion or dilatation of a line of fluid passing through a card, would raise burrs round the hole sometimes on one side, sometimes on the other, and sometimes on both, according to the disposition of the part of the paper near the surface, without any regard to the direction of the fluid.

15. Great thanks are due to the ingenious philosopher who examined the vane at Cremona, and who took the pains to describe so exactly the effects of the lightning upon it, and to communicate that description. The fact is extremely curious. It is well worth considering. He invites to that consideration. He has fairly given his own opinion. He will with candor receive that of others, though it may happen to differ from his own. By calmly discussing rather than by warmly disputing, the truth is most easily obtained. I shall give my opinion freely, as it is asked, hoping it may prove the true one;

and promising myself if otherwise, the honor at least of acknowledging frankly my error, and of being thankful to him who kindly shows it to me.

16. By the account given of this stroke of lightning upon the steeple at Cremona, it appears that the rod of iron or spindle on which the vane turned was of about two inches circumference, terminating in a cross above the vane, and its lower end fixed in a marble pedestal.

17. That the plate of the vane was copper, eight or nine inches wide, and near twice as long. That it was about one line thick near the spindle and growing thinner insensibly towards the other end, where its thickness did not exceed three quarters of a line, the weight 20½ ounces.

18. That the copper had been tinned over.

19. That the marble pedestal was split by the stroke into many pieces, and scattered over the roof, garden, and court of a neighboring building. One piece was thrown to the distance of 40 feet. The spindle was broken and displaced, and the vane thrown on the roof of the parsonage house 20 feet from the steeple.

20. That the vane was perforated in 18 places, the holes of irregular forms, and the metal which had filled them pushed outwards in some of them on one side of the vane, in others on the other. The copper shewed marks of having been partly melted, and in some places tin and copper melted and mixed together. There were marks of smoke in several places.

21. The ragged parts bent outwards round each hole, being brought back to their original flat position, were not, though evidently a little thinned and dilated, sufficient to fill the place.

22. From the effects described (19,) it is clear that the quantity of lightning which fell on this steeple at Cremona was very great.

23. The vane being a thin plate of copper, its edges and corners may be considered as a series of points, and being therefore sooner rendered negative by the repulsive force of an approaching positive cloud than the blunt and thick iron cross, (12,) was probably first struck; and thence became the conductor of that great quantity.

24. The plate of which the vane was formed being thicker near the spindle, and diminishing in thickness gradually to the other end, (17,) was probably not of copper plated by passing between rollers, for they would have left it of equal thickness; but of metal plated by the hammer. The surface too of rolled

copper is even and plain, that of hammered is generally uneven, with hollows occasioned by the impressions of the hammer.

25. In those concave impressions the metal is thinner than it is around them, and probably thinnest near the center of each impression.

26. The lightning which in passing through the vane was not sufficient to melt its thicker parts, might be sufficient to melt the thinner, (6), (7), (8), (9), and to soften those that were in a middle state.

27. The part of the tin (18) which covered the thinner parts being more easily melted and exploded than copper, (10) might possibly be exploded when the copper was but melted. The smoke appearing in several places, (20) is a proof of explosion.

28. There might probably be more tin in the concave impressions of the hammer on one side of the plate, than on the convex part of those impressions on the other. Hence stronger explosions on the concave side.

29. The nature of those explosions is to act violently in all directions; and in this case being near the plate they would act against it on one side, while they acted against the air on the other.

30. These thin parts of the plate being at the same instant partly in fusion, and partly so softened as to be near it; the softened parts were pushed outwards, a hole made, and some of the melted parts blown away; hence there was not left metal enough to refill the vacancy by bending back the ragged parts to their places.

31. The concave impressions of the hammer being indifferently made on both sides of the plate, it is natural from 28, 29, 30, that the pushing outwards of the softened metal by explosions, should be on both sides of the plate nearly equal.

32. That the force of a simple electrical explosion is very great, appears from the Geneva experiment, wherein a spark between two wires, under oil in a drinking glass, breaks the glass, body, stem, and foot, all to shivers.

33. The electric explosion of metal acts with still more force. A strip of leaf gold no broader than a straw, exploded between two pieces of thick looking glass, will break the glass to pieces, though confined by the screws of a strong press. And between two pieces of marble pressed together by a weight of 20 pounds will lift that weight. Much less force is necessary to move the melted and softened parts of a thin plate of copper.

34. This explication of the appearances on the vane, is drawn from what we already know of electricity and the effects of lightning. The learned author of the account gives a different but very ingenious one, which he draws from the appearances themselves. The matter pushed out of the holes is found, that of some on one side of the plate, and of others on the other. Hence he supposes them to be occasioned (if I understand him right) by streams or threads of electric matter of different and contrary kinds, rushing violently towards each other, and meeting with the vane, so accidently placed, as to be found precisely in the place of their meeting, where it was pierced by all of them, they all striking on both its sides at the same instant. This however is so extraordinary an accident, as to be in the authors own opinion almost miraculous, "Passeranno (says he) forse piu secoti prima que ritorni tralle infinite combinazioni un caso similé a quello della banderuola che ora abbiamo per mano. Forza é que si essaurisca una non piu udita miniera difulmini sopra una grande citta, pressoque seminata di campanili e di banderuole, il che e raris simo; e può ancora volti cio succedere, senza che s'incontri giammai un altera, banderuola tanto opportunetamente situata tra i limiti della fulminea explosione."

35. But though the author's explication of these appearances of the vane does not satisfy me, I am not so confident of my own as to propose its being accepted without confirmation by experiment. Those who have strong electric batteries may try it thus: form a little vane of paper, and spot it on both sides by attaching small pieces of leaf gold or tin foil, not exactly opposite to each other: then send the whole force of the battery through the vane, entering at one end of it and going out at the other. If the metal explodes, I imagine it will be found to make holes in the paper, forcing the torn parts out on the sides opposite to the metal. A more expensive but perhaps a more satisfactory experiment would be, to make a new vane as exactly as possible like that in question, in all the particulars of its description, and place it on a tall mast fixed on some hill subject to strokes of lightning, with a better conductor to the earth than the wood of the mast; if this should be struck in the course of a few years, and the same effects appear upon it, it would be still more miraculous to suppose it happened by accident to be exactly situated where those crossing threads of different electricities were afterwards to meet.

36. The perforation of glass bottles when overcharged is, I imagine, a different case, and not explicable by either of these hypothesis. I cannot well suppose the breach to be occasioned by the passage of electricity through it, since a single

bottle, though so broken in the discharge, always is found to send round in its usual course the quantity with which it was charged. Then the breach never happens but at the instant of the circuitous discharge, either by the discharging rod, or in overleaping the borders of the glass. Thus I have been present when a battery of twenty glasses was discharged by the discharging rod, and produced the same effect in its circuit as if none of the bottles had been pierced; and yet on examining them, we found no less than twelve of them in that situation. Now all the bottles of the battery being united by a communication of all the outsides together, and of all the insides together, if one of them had been pierced by a forced passage of the different kinds of electricity to meet each other, before the discharge by the discharging rod, it would not only have prevented the passage of the electricity by the common circuit, but it would have saved all the rest of its fellows, by conducting the whole through its own breach. And it is not easy to conceive that 12 bottles in 20 should be so equally strong as to support the whole strength of their charge, till the circuit of their discharge was opened, and then be so equally weak as to break altogether when the weight of that charge was taken off from them by opening the circuits. At some other time I will give you my opinion of this effect if you desire it.

I have taken the account of this stroke of lightning from an Italian piece, intitled *Analisi d'un nuovo fenomeno del fulmine*, the dedication of which is subscribed *Carlo Barletti delle Sacolo Pic;* who I suppose is the author. As I do not perfectly understand that language, I may possibly in some things have mistaken that philosopher's meaning. I therefore desire, my dear friend, that you would not permit this to be published, 'till you have compared and considered it with that original piece, and communicated to me your remarks and corrections. Nor would I in any case have it appear with my name, as perhaps it may occasion disputes, and I have no time to attend to them.

ON ELECTRICITY.

THE LEYDEN BOTTLE, AND M. VOLTA'S EXPERIMENT.

To * * * * *

Paris, 1778.

I thank you for the account you give me of M. Volta's experiment. You judge rightly in supposing that I have not much time at present to consider

philosophical matters; but as far as I understand it from your description, it is only another form of the Leyden Phial, and explicable by the same principles. I must however own myself puzzled by one part of your account, viz. "and thus the electric force once excited may be kept alive years together," which is perhaps only a mistake. I have known it indeed to be continued many months in a phial hermetically sealed, and suppose it may be so preserved for ages; but though one may, by repeatedly touching the knob of a charged bottle with a small insulated plate, like the upper one of the electrophore, draw an incredible number of sparks successively, that is, one after every touch, and those for a while not apparently different in magnitude, yet at length they will become small, and the charge be finally exhausted. But I am in the wrong to give my opinion till I have seen the experiment.

I like much your pasteboard machine, and think it may, in some respects, be preferable to the very large glass ones constructed here. The Duke de Chaulnes has one, said, if I remember right, to be five feet in diameter. I saw it tried, but it happened not to be in order. B. F.

AURORA BOREALIS.

Suppositions and Conjectures towards forming an Hypothesis for its Explanation, 1779.

1. Air heated by any means becomes rarefied and specifically *lighter* than other air in the same situation not heated.

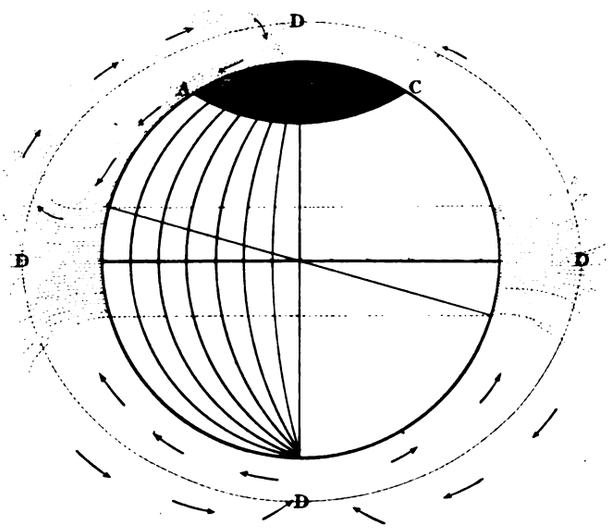
2. Air being thus made lighter rises, and the neighboring cooler heavier air takes its place.

3. If in the middle of a room you heat the air by a stove, or pot of burning coals near the floor, the heated air will *rise* to the ceiling, spread there over the cooler air till it comes to the cold walls; there being condensed and made heavier, it *descends* to supply the place of that cool air which had moved towards the stove or fire, in order to supply the place of the heated air which had ascended from the space around the stove or fire.

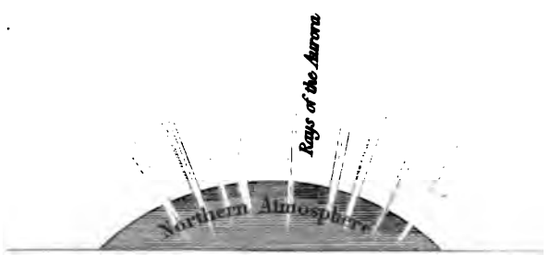
4. Thus there will be a continual circulation of air in the room, which may be rendered visible by making a little smoke; for that smoke will rise and circulate with the air.

5. A similar operation is performed by nature on the air of the globe. Our atmosphere is of a certain height, perhaps at a medium [ ] miles. Above

Plate III. to face Page 440



The Arrows represent the general Currents of the Air.
A.B.C. *the great Cake of Ice & Snow in the Polar Regions.*
D.D.D.D. *the Medium Height of the Atmosphere.*
The Representation is made only for one Quarter and one Meridian of the Globe; but is to be understood the same for all the rest.



Sidn.t Hall, sculp.t

London: Published by Henry Colburn, Conduit Street, May, 1818.

that height it is so rare as to be almost a vacuum. The air heated between the tropics is continually rising, and its place is supplied by northerly and southerly winds which come from those cool regions.

6. The light, heated air floating above the cooler and denser, must spread northward and southward, and descend near the two poles, to supply the place of the cooler air which had moved towards the equator.

7. Thus a circulation of air is kept up in our atmosphere as in the room above mentioned.

8. That heavier and lighter air may move in currents of different and even opposite directions, appears sometimes by the clouds that happen to be in these currents, as plainly as by the smoke in the experiment above mentioned. Also in opening a *door* between two chambers, one of which has been warmed, by holding a candle near the top, near the bottom, and near the middle, you will find a strong current of warm air passing out of the warmed room *above*, and another of cool air entering it *below*, while in the middle there is little or no motion.

9. The great quantity of vapor rising between the tropics forms clouds, which contain much electricity.

Some of them fall in rain, before they come to the polar regions.

10. If the rain be received in an isolated vessel, the vessel will be electrified; for every drop brings down some electricity with it.

11. The same is done by snow and hail.

12. The electricity so descending in temperate climates, is received and imbibed by the earth.

13. If the clouds are not sufficiently discharged by this means, they sometimes discharge themselves suddenly by striking into the earth, where the earth is fit to receive their electricity.

14. The earth in temperate and warm climates is generally fit to receive it, being a good conductor.

15. A certain quantity of heat will make some bodies good conductors that will not otherwise conduct.

16. Thus wax rendered fluid, and glass softened by heat, will both of them conduct.

17. And water, though naturally a good conductor, will not conduct well when frozen into ice by a common degree of cold; not at all where the cold is extreme.

18. Snow falling upon frozen ground has been found to retain its electricity; and to communicate it to an isolated body, when after falling, it has been driven about by the wind.

19. The humidity contained in all the equatorial clouds that reach the polar regions, must there be condensed and fall in snow.

20. The great cake of ice that eternally covers those regions may be too hard frozen to permit the electricity, descending with that snow, to enter the earth.

21. It will therefore be *accumulated upon that ice.*

22. The atmosphere being heavier in the polar regions, than in the equatorial, will there be lower; as well from that cause, as from the smaller effect of the centrifugal force: consequently the distance to the vacuum above the atmosphere will be less at the poles than elsewhere; and probably much less than the distance (upon the surface of the globe) extending from the pole to those latitudes in which the earth is so thawed as to receive and imbibe electricity; the frost continuing to lat. 80. which is 10 degrees or 600 miles from the pole, while the height of the atmosphere there of such density as to obstruct the motion of the electric fluid, can scarce be estimated above [ ] miles.

23. The *vacuum* above is a good conductor.

24. May not then the great quantity of electricity brought into the polar regions by the clouds, which are condensed there, and fall in snow, which electricity would enter the earth, but cannot penetrate the ice; may it not, I say (*as a bottle overcharged*) break through that low atmosphere and run along in the vacuum over the air towards the equator, diverging as the degrees of longitude enlarge, strongly visible where densest, and becoming less visible as it more diverges; till it finds a passage to the earth in more temperate climates, or is mingled with their upper air?

25. If such an operation of nature were really performed, would it not give all the appearances of an AURORA BOREALIS?

26. And would not the auroræ become more frequent *after the approach of winter;* not only because more visible in longer nights; but also because in summer the long presence of the sun may soften the surface of the great ice cake, and render it a conductor, by which the accumulation of electricity in the polar regions will be prevented?

27. The *atmosphere of the polar regions* being made more dense by the extreme cold, and all the moisture in that air being frozen, may not any great light arising therein, and passing through it, render its density in some degree visible

during the night-time, to those who live in the rarer air of more southern latitudes? and would it not in that case, although in itself a complete and full circle, extending perhaps ten degrees from the pole, appear to spectators so placed, (who could see only a part of it) *in the form of a segment*, its chord resting on the horizon, and its arch elevated more or less above it as seen from latitudes more or less distant, *darkish in colour*, but yet sufficiently *transparent* to permit some stars to be seen through it?

28. The rays of electric matter issuing out of a body, diverge by mutually repelling each other, unless there be some conducting body near to receive them: and if that conducting body be at a greater distance, they will *first diverge*, and then *converge* in order to enter it. May not this account for some of the varieties of figure seen at times in the *motions* of the luminous matter of the auroræ; since it is possible, that in passing over the atmosphere, from the north, in all directions or meridians, towards the equator, the rays of that matter may find, in many places portions of cloudy region, or moist atmosphere under them, which (being in the natural or negative state) may be fit to receive them, and towards which they may therefore converge; and when one of those receiving bodies is more than saturated, they may *again* diverge from it, towards other surrounding masses of such humid atmosphere, and thus form the *crowns*, as they are called, and other figures mentioned in the histories of this meteor?

29. If it be true that the clouds which go to the polar regions carry thither the vapors of the equatorial and temperate regions, which vapors are condensed by the extreme cold of the polar regions, and fall in snow or hail; the winds which come from those regions ought to be generally dry, unless they gain some humidity by sweeping the ocean in their way; and if I mistake not, the winds between the north-west and north-east are, for the most part dry, when they have continued some time.[1]

[In the Philosophical Transactions for 1774, p. 122, is a letter from Mr. J. S. Winn, to Dr. Franklin, stating, that since he had first made the observation concerning the south or south-west winds succeeding an aurora, he had found it invariably obtaining in twenty-three instances; and he adds in a note a fresh confirming instance. In reply, Dr. Franklin makes the following conjecture.]

The *auroræ boreales*, though visible almost every night of clear weather in the more northern regions, and very high in the atmosphere, can scarce be

[1] In one of the copies of this paper there is a line drawn across this last article.

visible in England but when the atmosphere is pretty clear of clouds for the whole space between us and those regions; and therefore are seldom visible there. This extensive clearness may have been produced by a long continuance of northerly winds. When the winds have long continued in one quarter the return is often violent. Allowing the fact so repeatedly observed by Mr. Winn, perhaps this may account for the violence of the southerly winds that soon follow the appearance of the aurora on our coasts.

ON A NEW INVENTED STOVE.[1]

To the Marquis Turgot.

Passy, 1st May, 1781.

I did intend, when in London, to have published a pamphlet, describing the new stove you mention, and for that purpose had a plate engraved, of which I send you an impression. But I have since been too much engaged in affairs to execute that intention. Its principle is that of a siphon reversed, operating on air in a manner somewhat similar to the operation of the common siphon on water. The funnel of the chimney is the longer leg, the vase is the shorter: and, as in the common siphon, the weight of water in the longer leg is greater than that in the shorter leg; and thus in descending permits the water in the shorter leg to rise, by the pressure of the atmosphere. So in this aerial siphon, the levity of the air in the longer leg being greater than that in the shorter, it rises and permits the pressure of the atmosphere to force that in the shorter to descend. This causes the smoke to descend also, and in passing through burning coals, it is kindled into flame, thereby heating more the passages in the iron box whereon the vase which contains the coals is placed; and retarding at the same time the consumption of the coals. On the left hand of the engraving you see the machine put together and placed in a niche built for it in a common chimney. On the right hand the parts (except the vase) are shown separately. If you should desire a more particular explanation, I will give it to you *viva voce*, whenever you please. I think with you that

---

[1] See Plate IV.

it is capable of being used to advantage in our kitchens, if one could overcome the repugnance of cooks to the using of new instruments and new methods.

With great respect, I have the honor to be, &c. B. FRANKLIN.

ON THE LONG RETENTION OF INFECTION IN DEAD BODIES AFTER SEPULTURE, &c.

TO MONS. VICQ D'AZYR.

SIR, *Passy, July* 20, 1781.

I RECEIVED the letter you some time since did me the honor of writing to me, accompanied with a number of the pieces that were distributed at the last public meeting of the Royal Society of Medicine. I shall take care to forward them to different parts of America, as desired. Be pleased to present my thanks to the society for the copy sent me of the curious and useful reports relating to the sepulture in the island of Malta. I should be glad of another copy, if it can be spared, being desirous of sending one to each of the philosophical societies in America.

With respect to the length of time during which the power of infection may be contained in dead bodies, which is considered in that report, I would mention to you three facts, which, though not all of equal importance or weight, yet methinks it may be well to preserve a memorandum of them, that such observations may be made when occasion offers, as are proper to confirm or invalidate them.

While I resided in England, I read in a newspaper, that in a country village at the funeral of a woman whose husband had died of the small-pox 30 years before, and whose grave was dug so as to place her by his side, the neighbors attending the funeral were offended with the smell arising out of the grave, occasioned by a breach in the husband's old coffin, and 25 of them were in a few days taken ill with that distemper, which before was not in that village or its neighborhood, nor had been for the number of years above mentioned.

About the years 1763 or 1764, several physicians of London, who had been present from curiosity at the dissection of an Egyptian mummy, were soon after taken ill of a malignant fever, of which they died. Opinions were divided

on this question. It was thought by some that the fever was caused by infection from the mummy; in which case the disease it died of must have been embalmed as well as the body. Others who considered the length of time, at least 2000 years, since that body died, and also that the embalming must be rather supposed to destroy the power of infection, imagined the illness of these gentlemen must have had another original.

About the year 1773, the captain of a ship which had been at the island of Teneriffe, brought from thence the dried body of one of the ancient inhabitants of that island, which must have been at least 300 years old, that custom of drying the dead there having been so long discontinued. Two members of the Royal Society went to see that body. They were half an hour in a small close room with it, examining it very particularly. The next day they were both affected with a singularly violent *cold*,[1] attended with uncommon circumstances, which continued a long time. On comparing together the particulars of their disorder, they agreed in suspecting that possibly some effluvia from the body might have been the occasion of that disorder in them both: perhaps they were mistaken. But as we do not yet know with certainty how long the power of infection may in some bodies be retained, it seems well in such cases to be cautious till farther light shall be obtained.

I wish it were in my power to contribute more essentially in advancing the good work the society are so laudably engaged in. Perhaps some useful hints may be extracted from the enclosed paper of Mr. Small's.[2] It is submitted to your judgment; and if you should find any thing in it worthy of being communicated to the society, and of which extracts may be useful if printed in the memoirs, it will be a pleasure to me; who am, with great esteem and respect, sir, &c.

B. FRANKLIN.

P. S. July 24. Since writing the above, I have met with the following article in the *Courier de l'Europe* of the 13th inst. viz.

Extrait d'une lettre d'Edimbourg, en date du 30 Juin.

"J'apprends par une personne qui vient de Montrose, que la fièvre épidémique qui s'est manifestée il y a quelque tems dans le Méarns, désole

[1] Cold is a general name given by the English to all sorts of rheums and catarrhs.

[2] See OF VENTILATION—*Writings*, Part IV.

encore aujourd'hui ce voisinage avec tant de violence qu'un de ses amis a été invité à assister à 15 enterremens dans un seul jour. On dit que cette maladie doit son origine à la folle curiosité de quelques paysans, qui, à la Chandeleur dernière, exhumèrent quelques personnes mortes de la peste dans le siècle précédent, et qu'on avoit enterrées dans le Moss de *Arnhall*. Ce qui est arrivé à la famille de M. Robert Aikenhead est singulièrement malheureux: vers le milieu du mois dernier il a été attaqué de cette contagion, et elle s'est communiquée au reste de sa famille consistant en neuf personnes, dont deux sont mortes ainsi que lui, et le reste n'est pas sans danger."

[*Translation.*]

Extract of a letter from Edinburgh, dated June 30.

"I understand by a person just returned from Montrose, that the epidemic fever which has made its appearance in the county of Mearns, ravages that neighborhood with such violence, that one of his friends was invited to attend fifteen funerals on the same day. It is said that this malady originates in the ill-judged curiosity of some country people, who, at Candlemas last, opened the graves of some persons who had died of the plague in the preceding century, and who had been buried in the Moss of Arnhall. The circumstances which have happened in the family of Mr. Robert Aikenhead are singularly unfortunate: about the middle of last month he took the infection, which was communicated to the rest of his family, consisting of nine persons; two of whom, together with himself, are dead, and the others not out of danger."

ON CONDUCTORS OF HEAT, &c.

To Dr. Ingenhausz.

Passy, Oct. 2, 1781.

It is a long time, my dear friend, since I have had the pleasure of writing to you. I have postponed it too often from a desire of writing a good deal on various subjects, which I could not find sufficient time to think of properly. Your experiments *on the conducting of heat* was one subject; the

finishing my *remarks on the stroke of lightning in Italy*[1] was another; then I was taken ill with a severe fit of the gout soon after you left us, which held me near three months, and put my business and correspondence so far behindhand, that I was long in getting it up again. Add to this, that I find indolence increases with age, and that I have not near the activity I formerly had. But I cannot afford to lose your correspondence, in which I have always found so much pleasure and instruction: I now force myself to write, and I fancy this letter will be long.

I have now before me your several favors of Dec. 5, 1780, Feb. 7, April 7, May 23, and Aug. 29, 1781. I was glad to find by the first, that you enjoyed a good state of health, and that you had leisure to pursue your philosophical inquiries. I wish you that continued success which so much industry, sagacity, and exactness in making experiments, have a right to expect. You will have much immediate pleasure by that success, and in time great reputation. But for the present the reputation will be given grudgingly, and in as small a quantity as possible, mixed too with some mortification. One would think that a man so laboring disinterestedly for the good of his fellow-creatures, could not possibly by such means make himself enemies; but there are minds who cannot bear that another should distinguish himself even by greater usefulness; and though he demands no profit, nor any thing in return but the good-will of those he is serving, they will endeavor to deprive him of that, first by disputing the truth of his experiments, then their utility, and being defeated there, they finally dispute his right to them, and would give the credit of them to a man that lived 3000 years ago, or at 3000 leagues distance, rather than to a neighbor or even a friend. Go on, however, and never be discouraged. Others have met with the same treatment before you, and will after you. And whatever some may think and say, it is worth while to do men good, for the self-satisfaction one has in the reflection.

Your account of the experiments you made with the wires, gave me a great deal of pleasure: I have shown it to several persons here, who think it exceedingly curious. If you should ever repeat those experiments, I wish your attention to one circumstance. I think it possible, that in dipping them into the wax, and taking them out suddenly, the metal which attracts heat most readily, may chill and draw out with it a thicker coat of wax; and this thicker

[1] See—*Attempt to explain the effects of Lightning on the Steeple of Cremona.* WRITINGS. Part IV.

coat might, in the progress of the experiment, be longer melting. They should therefore be kept so long in the wax, as to be all well and equally heated. Perhaps you may thus find the progress of heat in the silver quicker and greater. I think, also, that if the hot oil in which you dipped the ends was not stagnant, but in motion, the experiment would be more complete, because the wire which quickest diminishes the heat of the oil next to it, finds soonest the difficulty of getting more heat from the oil farther distant, which depends on the nature of the oil as a conductor of heat, that which is already cooled interfering between the hotter oil and the wire. In reversing the experiment also, to try which of the metals cools fastest, I think the wires should be dipped in *running* cold water; for when stagnant, the hot wires, by communicating heat to the water that is near them, will make it less capable of receiving more heat; and as the metals which communicate their heat most freely and readily will soonest warm the water round them, the operation of such metals may therefore soonest stop,—not because they naturally longer withhold their heat, but because the water near them is not in a state to receive it. I do not know that these hints are founded; I suggest them only as meriting a little consideration. Every one is surprised that the progress of the heat seems to have no connexion with the gravity or the levity of the metals. B. FRANKLIN.

AN ACCOUNT OF TOADS

FOUND ENCLOSED IN THE SOLID OF A STONE QUARRY.

AT Passy, near Paris, April 6, 1782, being with M. De Chaumont, viewing his quarry, he mentioned to me, that the workmen had found a living toad shut up in the stone. On questioning one of them, he told us they had found four in different cells which had no communication: that they were very lively and active when set at liberty: that there was in each cell some loose, soft, yellowish earth, which appeared to be very moist. We asked, if he could show us the parts of the stone that formed the cells? He said no; for they were thrown among the rest of what was dug out, and he knew not where to find them. We asked, if there appeared any opening by which the animal could enter? He said, no, not the least. We asked if, in the course of his business as a laborer in quarries, he had often met with the like? He said, never before.

We asked, if he could show us the toads? He said, he had thrown two of them up on a higher part of the quarry, but knew not what became of the others. He then came up to the place where he had thrown the two, and finding them, he took them by the foot, and threw them up to us, upon the ground where we stood. One of them was quite dead and appeared very lean: the other was plump and still living. The part of the rock where they were found, is at least 15 feet below its surface, and is a kind of limestone. A part of it is filled with ancient sea shells, and other marine substances. If these animals have remained in this confinement since the formation of the rock, they are probably some thousands of years old. We have put them in spirits of wine, to preserve their bodies a little longer. The workmen have promised to call us if they meet with any more, that we may examine their situation. Before a suitable bottle could be found to receive them, that which was living when we first had them, appeared to be quite dead and motionless; but being in the bottle, and the spirits poured over them, he flounced about in it very vigorously for two or three minutes, and then expired.

It is observed that animals who perspire but little, can live long without food; such as tortoises, whose flesh is covered with a thick shell, and snakes, who are covered with scales, which are of so close a substance as scarcely to admit the passage of perspirable matter through them. Animals that have open pores all over the surface of their bodies, and live in air which takes off continually the perspirable part of their substance, naturally require a continual supply of food to maintain their bulk. Toads shut up in solid stone, which prevents their losing any thing of their substance, may perhaps for that reason need no supply; and being guarded against all accidents, and all the inclemencies of the air and changes of the seasons, are, it seems, subject to no diseases, and become as it were immortal. B. F.

[*The following copy of a letter from Sir John Pringle to Mr. A. Small, was annexed to the above account, in Dr. F.'s papers.*]

TO MR. SMALL.

SIR, *Minorca, April* 25, 1780.

Last year I had the honor to inform you, that two of those large moths called Muskitoe Hawks, which appear about September, and disappear about the beginning of December, lived 71 days after I had cut their heads off with a pair of scissars.

The last autumn I made the same experiment upon several, keeping them under separate glasses, in a closet, where there was no fire. The most of them lived different periods, from 3, to 60 and 70 days. Those which exceeded that number of days, were four, viz. one from the 30th of October to the 21st of January, 83 days; one from the 12th of December to the 21st of April, 131 days; and one from the 24th of October to the 15th of April, 174 days. As they are very active, and covered with a sort of plumage, which makes it difficult to cut their heads off, without bruising or otherwise injuring the body, I imagine that may partly be the reason of their living different periods; and if, after the operation, any glutinous liquor proceeded from the body, that moth would die soon.

I put several under glasses, without cutting off their heads, none of which lived many days.

I am, sir, with great esteem, your most obedient and most humble servant,

(Signed) JOHN PRINGLE.

QUERIES ON ELECTRICITY,

FROM DR. INGENHAUSZ; WITH ANSWERS, BY DR. FRANKLIN.

Question 1.

IF the electrical fluid is truly accumulated on the inside of a Leyden phial, and expelled in the same proportion from the other side, why are the particles of glass not all thrown outwards, when the phial being overcharged, breaks or is perforated by a spontaneous explosion?

Answer.

By the circumstances that have appeared to me, in all the jars that I have seen perforated at the time of their explosion, I have imagined that the charge did not pass by those perforations. Several single jars that have broke while I was charging them, have shown, besides the perforation in the body, a trace on both sides of the neck, where the polish of the glass was taken off the breadth of a straw; which proved that great part at least of the charge, probably all, had passed over that trace. I was once present at the discharge of a battery containing thirty jars, of which eight were perforated and spoilt at the time of the discharge, yet the effect of the charge on the bodies upon which it was intended to operate, did not appear to be diminished. Another time I was present when twelve out of twenty jars were broken at the time of the discharge, yet the effect of the charge which passed in the regular circuit, was the same as it would have been if they had remained whole. Were those perforations an

effect of the charge within the jar forcing itself through the glass to get at the outside, other difficulties would arise, and demand explanation. 1. How it happens that in eight bottles, and in twelve the strength to bear a strong charge should be so equal, that no one of them would break before the rest, and thereby save his fellows; but all should burst at the same instant? 2. How it happens that they bear the force of the great charge till the instant that an easier means of discharge is offered them, which they make use of, and yet the fluid breaks through at the same time?

My conjecture is, that there has been in the place where the rupture happens, some defect in the glass, some grain of sand perhaps, or some little bubble in the substance nearly void, where during the charging of the jar, the electric fluid forced in and confined till the pressure is suddenly taken off by the discharge, when not being able to escape so quickly, it bursts its way out by its elastic force. Hence all the ruptures happen nearly at the same instant with the regular discharge, though really a little posterior, not being themselves discharges, but the effects of a discharge which passed in another channel.

Question 2.

When a strong explosion is directed through a pack of cards or a book, having a piece of tin foil between several of its leaves, the electrical flash makes an impression in some of those metallic leaves, by which it seems as if the direction of the electric explosion had gone from the outside towards the inside, when on the other metallic leaves, the impression is in such a direction, that it indicates the current of electrical fire to have made its way from the inside of the phial towards the outside; so that it appears to some electricians, that in the time of the explosion of an electrical phial, two streams of electrical fire rush at the same time from both surfaces, and meet or cross one another.

Answer.

These impressions are not effects of a moving body, striking with force in the direction of its motion; they are made by the burrs rising in the neighboring perforated cards, which rise accidentally sometimes on one side of a card, sometimes on the other, in consequence of certain circumstances in the form of their substances or situations. In a single card, supported without touching others, while perforated by the passing fluid, the burr generally rises on both sides, as I once showed to Mr. Symmer at his house. I imagine that the hole is made

by a fine thread of electric fluid first passing, and augmented to a bigger thread at the time of the explosion, which obliging the parts of a card to recede every way, condenses a part within the substance, and forces a part out on each side, because there is least resistance.

Question 3.

When a flash of lightning happens to hit a flat piece of metal, the metal has sometimes been pierced with several holes, whose edges were turned some the one way and some the other, so that it has appeared to some philosophers that several streams of electrical fire had rushed in one way, and some the opposite way. Such an effect of lightning has been published lately by Father Barletti.

Answer.

This will be answered in my remarks on Mr. Barletti's book; which remarks, when finished, I will send you.

Question 4.

Though from the very charging of the Leyden phial, it seems clear, that the electrical fluid does in reality not pervade the substance of glass, yet it is still difficult to conceive how such a subtile fluid may be forced out from one side of a very thick pane of glass, by a similar quantity of electrical fire thrown upon the other surface, and yet that it does not pass through any substance of glass, however thin, without breaking it. Is there some other fact or illustration besides those to be found in your public writings, by which it may be made more obvious to our understanding, that electrical fire does not enter at all the very substance of glass, and yet may force from the opposite surface an equal quantity; or that it really enters the pores of the glass without breaking it? Is there any comparative illustration or example in nature, by which it may be made clear, that a fluid thrown upon one surface of any body, may force out the same fluid from the other surface without passing through the substance?

Answer.

That the electric fluid, by its repulsive nature, is capable of forcing portions of the same fluid out of bodies without entering them itself, appears from this experiment. Approach an isolated body with a rubbed tube of glass; the side next the tube will then be electrised negatively, the opposite positively. If

a pair of cork balls hang from that opposite side, the electrical fluid forced out of the body will appear in those balls, causing them to diverge. Touch that opposite side, and you thereby take away the positive electricity. Then remove the tube, and you leave the body all in a negative state. Hence it appears, that the electric fluid appertaining to the glass tube did not enter the body, but retired with the tube, otherwise it would have supplied the body with the electricity it had lost.

With regard to *Powder Magazines*, my idea is, that to prevent the mischief which might be occasioned by the stones of their walls flying about in case of accidental explosion, they should be constructed in the ground; that the walls should be lined with lead, the floor lead, all a quarter inch thick, and the joints well soldered; the cover copper, with a little scuttle, to enter the whole in the form of a canister for tea. If the edges of the cover-scuttle fall into a copper channel containing mercury, not the smallest particle of air or moisture can enter to the powder, even though the walls stood in water, or the whole was under water.

ON THE THEORY OF THE EARTH, AND ITS MAGNETISM.

To the Abbé Soulavie.

[Occasioned by his sending me some notes he had taken of what I had said to him in conversation on the Theory of the Earth, and written to set him right in some points wherein he had mistaken my meaning.] B. F.

Sir, *Passy, September* 22, 1782.

I return the papers with some corrections. I did not find coal mines under the calcareous rock in Derbyshire. I only remarked, that at the lowest part of that rocky mountain which was in sight, there were oyster shells mixed in the stone; and part of the high county of Derby being probably as much above the level of the sea, as the coal mines of Whitehaven were below it, it seemed a proof that there had been a great *boulversement* in the surface of that island, some part of it having been depressed under the sea, and other parts, which had been under it, being raised above it. Such changes in the superficial parts of the globe, seemed to me unlikely to happen, if the earth were solid to the centre. I therefore imagined, that the internal parts might be a fluid more dense, and of greater specific gravity than any of the solids we are acquainted with, which therefore might swim in or upon that fluid. Thus the surface of the globe

would be a shell, capable of being broken and disordered by the violent movements of the fluid on which it rested. And as air has been compressed by art so as to be twice as dense as water, in which case, if such air and water could be contained in a strong glass vessel, the air would be seen to take the lowest place, and the water to float above and upon it; and as we know not yet the degree of density to which air may be compressed, and M. Amontons calculated, that its density increasing as it approached the centre, in the same proportion as above the surface, it would at the depth of leagues be heavier than gold; possibly the dense fluid occupying the internal parts of the globe might be air-compressed. And as the force of expansion in dense air when heated, is in proportion to its density, this central air might afford another agent to move the surface, as well as be of use in keeping alive the subterraneous fires; though, as you observe, the sudden rarefaction of water coming into contact without those fires, may also be an agent sufficiently strong for that purpose, when acting between the incumbent earth and the fluid on which it rests.

If one might indulge imagination in supposing how such a globe was formed, I should conceive, that all the elements in separate particles being originally mixed in confusion, and occupying a great space, they would (as soon as the Almighty fiat ordained gravity, or the mutual attraction of certain parts, and the mutual repulsion of others, to exist) all move to their common centre: that the air being a fluid whose parts repel each other, though drawn to the common centre by their gravity, would be densest towards the centre, and rarer as more remote; consequently all matters lighter than the central parts of that air, and immersed in it, would recede from the centre, and rise till they arrived at that region of the air which was of the same specific gravity with themselves, where they would rest; while other matter, mixed with the lighter air, would descend, and the two meeting, would form the shell of the first earth, leaving the upper atmosphere nearly clear. The original movement of the parts towards their common centre would naturally form a whirl there; which would continue upon the turning of the new-formed globe upon its axis, and the greatest diameter of the shell would be in its equator. If by any accident afterwards the axis should be changed, the dense internal fluid, by altering its form, must burst the shell, and throw all its substance into the confusion in which we find it. I will not trouble you at present with my fancies concerning the manner of forming the rest of our system. Superior beings smile at our theories, and at our presumption in making them. I will just mention, that your observation

of the ferruginous nature of the lava which is thrown out from the depths of our volcanos, gave me great pleasure. It has long been a supposition of mine that the iron contained in the surface of the globe has made it capable of becoming, as it is, a great magnet; that the fluid of magnetism perhaps exists in all space; so that there is a magnetical north and south of the universe, as well as of this globe, and that if it were possible for a man to fly from star to star, he might govern his course by the compass; that it was by the power of this general magnetism this globe became a particular magnet. In soft or hot iron the fluid of magnetism is naturally diffused equally; when within the influence of the magnet it is drawn to one end of the iron, made denser there and rarer at the other. While the iron continues soft and hot, it is only a temporary magnet; if it cools or grows hard in that situation, it becomes a permanent one, the magnetic fluid not easily resuming its equilibrium. Perhaps it may be owing to the permanent magnetism of this globe, which it had not at first, that its axis is at present kept parallel to itself, and not liable to the changes it formerly suffered, which occasioned the rupture of its shell, the submersions and emersions of its lands, and the confusion of its seasons. The present polar and equatorial diameters differing from each other near ten leagues, it is easy to conceive, in case some power should shift the axis gradually, and place it in the present equator, and make the new equator pass through the present poles, what a sinking of the waters would happen in the present equatorial regions, and what a rising in the present polar regions; so that vast tracts would be discovered that now are under water, and others covered, that are now dry, the water rising and sinking in the different extremes near five leagues. Such an operation as this possibly occasioned much of Europe, and among the rest this Mountain of Passy on which I live, and which is composed of limestone, rock and sea-shells, to be abandoned by the sea, and to change its ancient climate, which seems to have been a hot one. The globe being now become a perfect magnet, we are, perhaps, safe from any change of its axis. But we are still subject to the accidents on the surface, which are occasioned by a wave in the internal ponderous fluid; and such a wave is producible by the sudden violent explosion you mention, happening from the junction of water and fire under the earth, which not only lifts the incumbent earth that is over the explosion, but impressing with the same force the fluid under it, creates a wave, that may run a thousand leagues, lifting, and thereby shaking, successively, all the countries under which it passes. I know not, whether I have expressed myself so

clearly, as not to get out of your sight in these reveries. If they occasion any new inquiries, and produce a better hypothesis, they will not be quite useless. You see I have given a loose to imagination; but I approve much more your method of philosophising, which proceeds upon actual observation, makes a collection of facts, and concludes no further than those facts will warrant. In my present circumstances, that mode of studying the nature of the globe is out of my power, and therefore I have permitted myself to wander a little in the wilds of fancy. With great esteem, I have the honor to be, sir, &c.

B. FRANKLIN.

P. S. I have heard, that chemists can by their art decompose stone and wood, extracting a considerable quantity of water from the one, and air from the other. It seems natural to conclude from this, that water and air were ingredients in their original composition: for men cannot make new matter of any kind. In the same manner may we not suppose, that when we consume combustibles of all kinds, and produce heat or light, we do not create that heat or light; but only decompose a substance, which received it originally as a part of its composition? Heat may be thus considered as originally in a fluid state; but attracted by organised bodies in their growth, becomes a part of the solid. Besides this, I can conceive, that in the first assemblage of the particles of which this earth is composed, each brought its portion of the loose heat that had been connected with it, and the whole, when pressed together, produced the internal fire that still subsists.

ON AN ELECTRICAL EXPERIMENT.

To DR. INGENHAUSZ.

Passy, May 16, 1786.

I AM glad you have made the experiments you mention, and with success. You will find that the holes are not made by the impulse of the fluid moving in certain directions, but by circumstances of explosion of parts of the matter; and I still think my explanation of the holes in the vane probable, viz. that it was the explosion of tin against parts of the copper-plate that were almost in a state of fusion, and therefore easily burst through either on one side or the other as it happened. The bursting of the 12 bottles all at once, I take

to be owing to small bubbles in the substance of the glass, or grains of sand, into which a quantity of the electric fluid had been forced and compressed while the bottles were charging; and when the pressure was suddenly taken off by discharging the bottles, that confined portion by its elastic force expanding caused the breach. My reasons for thinking that the charge did not pass by those holes you will find in a former letter; and I think you will always find that the coating within and without is forced both ways by the explosion of those bubbles.

B. FRANKLIN.

ON THE SHOCK BY THE ELECTRIC BOTTLE, AND THE DENSITY OF GLASS.

To * * * *.

SIR, *Passy, June* 14, 1783.

I received some time since the letter you honored me with, containing your hypothesis for explaining the shock given by the electric bottle, on which you seem to desire my opinion. It is many years since I was engaged in those pleasing studies, and my mind is at present too much occupied with other and more important affairs to permit my returning to them. I cannot therefore examine your ingenious hypothesis with the attention it appears to merit. You will find in a letter of mine to Dr. Lining, dated March 18, 1775, that I abandoned my hypothesis of the greater density of glass in the middle than near its surfaces as contributing to produce the effect; because I found the effect to be the same after I had ground that part away. And I think you might likewise try yours by an easy experiment. Take a plate of lead twelve inches square, cover one of its sides with a coat of bees' wax about one line thick; upon that apply closely a thin plate of lead eight inches square, so as to leave a margin of two inches all round. Electrify this composition of lead and wax, and try if you can receive a shock from it; if not, you may draw thence a further argument to support your hypothesis, because the wax though a non-conductor is not elastic, any more than pure lead. I see you are endowed with a genius for the study of nature, and I would recommend it to you to employ your time rather in making experiments than in making hypothesis and forming imaginary systems, which we are all too apt to please ourselves with till some

experiment comes, and unluckily destroys them. Wishing you success in your inquiries, I have the honor to be, sir, &c. B. FRANKLIN.

To Mr. Edward Nairne.

On his Patent Electrical Machine, and the Effects of Lightning on the eyes, &c. of animals killed by it.

DEAR SIR, *Passy, Oct.* 18, 1783.

I received your favor of August 14, by Mr. Sykes, with the book of directions for using your patent electric machine. The machine itself is also come to hand in good order, after some delay on the road; and I think it very ingeniously contrived indeed: I wish your success in the sale may be equal to its merits. The experiments in your pamphlet gave me pleasure, and I shall be glad to see the account you mention of the shortening of wires by lightning.

What you have heard of the eyes of sheep forced out by a stroke of lightning which killed them, puts me in mind of having formerly seen at Philadelphia six horses all killed by lightning in a stable, every one of whom appeared to have bled at the eyes, nose, and mouth; though I do not recollect that any of their eyes were out.

You are so good as to consider how much my time has been and is taken up, and to excuse on that account my being a bad correspondent. Near three years ago I began a letter to you on the subject of hygrometers. I had written three folio pages of it when I was interrupted by some business; and before I had time to finish it I had mislaid it. I have now found it, and having added what I suppose I had intended to add, I enclose it. You can judge better than myself whether my idea of such an instrument is practicable and may be useful.

If you favor me with another line, let me know how Mrs. Nairne does, and your amiable children. With great esteem, &c. I am, B. FRANKLIN.

[*Enclosed in the foregoing.*]

PROPOSAL FOR A SLOWLY SENSIBLE HYGROMETER FOR CERTAIN PURPOSES.

To Mr. Nairne.

SIR, *Passy, near Paris, Nov.* 13, 1780.

The qualities hitherto sought in an hygrometer, or instrument to discover the degree of moisture and dryness in the air, seems to have been an aptitude to

receive humidity readily from a moist air, and to part with it as readily to a dry air. Different substances have been found to possess more or less of this quality; but when we shall have found the substance that has it in the greatest perfection, there will still remain some uncertainty in the conclusions to be drawn from the degree shown by the instrument, arising from the actual state of the instrument itself as to heat and cold. Thus if two bottles or vessels of glass or metal being filled, the one with cold, the other with hot water are brought into a room, the moisture of the air in the room will attach itself in quantities to the surface of the cold vessel, while if you actually wet the surface of the hot vessel, the moisture will immediately quit it, and be absorbed by the same air. And thus in a sudden change of the air from cold to warm, the instrument remaining longer cold may condense and absorb more moisture and mark the air as having become more humid, than it is in reality; and the contrary is a change from warm to cold.

But if such a suddenly changing instrument could be free from those imperfections, yet when the design is to discover the different degrees of humidity in the air of different countries, I apprehend the quick sensibility of the instrument to be rather a disadvantage; since to draw the desired conclusions from it, a constant and frequent observation day and night in each country will be necessary for a year or years, and the mean of each set of observations is to be found and determined. After all which, some uncertainty will remain respecting the different degrees of exactitude with which different persons may have made and taken notes of their observations.

For these reasons I apprehend that a substance though capable of being distended by moisture and contracted by dryness, is so slow in receiving and parting with its humidity that the frequent changes in the atmosphere have not time to effect it sensibly, and which therefore should gradually take nearly the medium of all those changes and preserve it constantly, would be the most proper substance of which to make such an hygrometer.

Such an instrument you, my dear Sir, though without intending it, have made for me; and I, without desiring or expecting it, have received from you. It is therefore with propriety that I address to you the following account of it, and the more as you have both a head to contrive and a hand to execute the means of perfecting it. And I do this with greater pleasure, as it affords me the opportunity of renewing that ancient correspondence and acquaintance with you, which to me was always so pleasing and so instructive.

You may possibly remember that in or about the year 1758, you made for me a set of artificial magnets, six in number, each 5½ inches long, ½ an inch broad, and ⅛ of an inch thick. These with two pieces of soft iron which together equalled one of the magnets were enclosed in a little box of mahogany wood, the grain of which ran with, and not across the length of the box, and the box was closed by a little shutter of the same wood, the grain of which ran *across* the box, and the ends of this shutting piece were bevelled so as to fit and slide in a kind of dovetail groove when the box was to be shut or opened.

I have been of opinion that good mahogany wood was not affected by moisture so as to change its dimensions, and that it was always to be found as the tools of the workmen left it. Indeed the difference at different times in the same country is so small as to be scarcely in a common way observable. Hence the box which was made so as to allow sufficient room for the magnets to slide in and out freely, and when it afforded them so much play that by shaking the box one could make them strike the opposite sides of the box alternately, continued in the same state all the time I remained in England, which was four years, without any apparent alteration. I left England in August 1762, and arrived at Philadelphia in October the same year. In a few weeks after my arrival, being desirous of showing your magnets to a philosophical friend, I found them so tight in the box, that it was with difficulty that I got them out, and constantly during the two years I remained there, viz. till November 1764, the difficulty of getting them out and in continued. The little shutter too, as wood does not shrink lengthways of the grain, was found too long to enter its grooves, and not being used was mislaid and lost, and I afterwards had another made that fitted.

In December 1764, I returned to England, and after some time I observed that my box was become full big enough for my magnets, and too wide for my new shutter; which was so much too short for its grooves, that it was apt to fall out; and to make it keep in, I lengthened it by adding to each end a little coat of sealing-wax.

I continued in England more than ten years, and during that time, after the first change, I perceived no alteration. The magnets had the same freedom in their box, and the little shutter continued with the added sealing-wax to fit its grooves, till some weeks after my second return to America.

As I could not imagine any other cause for this change of dimensions in the box when in the different countries, I concluded first generally that the air of

England was moister than that of America. And this I supposed the effect of its being an island, where every wind that blows must necessarily pass over some sea before it arrived, and of course lick up some vapor. I afterwards indeed doubted whether I had not been too general in my conclusion; and whether it might not be just only so far as related to the city of London, where I resided; because there are many causes of moisture in the city air, which do not exist to the same degree in the country; such as the brewers and dyers boiling cauldrons, and the great number of pots and tea-kettles continually on the fire, sending forth abundance of vapor; and also the number of animals who by their breath constantly increase it; to which may be added that even the vast quantity of sea-coals burnt there in kindling discharge a great deal of moisture.

When I was in England the last time, you also made for me a little achromatic pocket telescope. The body was brass, and it had a round case (I think of thin wood) covered with shagreen. All the while I remained in England, though possibly there might be some small changes in the dimensions of this case, I neither perceived nor suspected any. There was always comfortable room for the telescope to slip in and out. But soon after I arrived in America, which was in May, 1775, the case became too small for the instrument, it was with much difficulty and various contrivances that I got it out, and I could never after get it in again during my stay there, which was eighteen months. I brought it with me to Europe, but left the case as useless, imagining that I should find the continental air of France as dry as that of Pennsylvania, where my magnet-box had also returned a second time to its narrowness and pinched the pieces as heretofore, obliging me, too, to scrape the sealing-wax off the ends of the shutter.

I had not been long in France before I was surprised to find that my box was become as large as it had always been in England, the magnets entered and came out with the same freedom; and when in I could rattle them against its sides; this has continued to be the case without sensible variation. My habitation is out of Paris, distant almost a league, so that the moist air of the city cannot be supposed to have much effect upon the box: and I am on a high dry hill, as likely to be dry as any air in France. Whence it seems probable, that the air of England in general may, as well as that of London, be moister than the air of America, since that of France is so, and in a part so distant from the sea.

The greater dryness of the air in America appears from some other observations. The cabinet-work formerly sent us from London, which consisted in thin plates of fine wood, glued upon fir, never would stand with us, the veneering, as those plates are called, would get loose and come off; both woods shrinking, and their grains often crossing, they were for ever cracking and flying. And in my electrical experiments there, it was remarkable that a mahogany table on which my jars stood under the prime conductor to be charged, would often be so dry, particularly when the wind had been some time at N. W., which with us is a very drying wind, as to isolate the jars and prevent their being charged till I had formed a communication between their coatings and the earth. I had a like table in London, which I used for the same purpose all the time I resided there; but it was never so dry as to refuse conducting the electricity.

Now what I would beg leave to recommend to you, is, that you would recollect, if you can, the species of mahogany of which you made my box, for you know there is a great deal of difference in woods that go under that name; or if that cannot be, that you would take a number of pieces of the finest and closest-grained mahogany that you can meet with, plane them to the thinness of about a line, and the width of about two inches across the grain; and fix each of the pieces in some instrument that you can contrive, which will permit them to contract and dilate, and will show in sensible degrees by a moveable hand upon a marked scale, the otherwise less sensible quantities of such contraction and dilatation. If these instruments are all kept in the same place while making, and are graduated together while subject to the same degrees of moisture or dryness, I apprehend you will have so many comparable hygrometers, which being sent into different countries, and continued there for some time, will find and show there the mean of the different dryness and moisture of the air of those countries; and that with much less trouble than by any other hygrometer hitherto in use. With great esteem, I am, dear sir, your most obedient and most humble servant, B. FRANKLIN.

ON THE COMET SEEN IN YORKSHIRE, 1783.

To Mr. Rittenhause, Philadelphia.

Sir, *Passy, Dec.* 15, 1783.

All astronomical news that I receive, I think it my duty to communicate to you. The following is just come to hand, in a letter from the President of the Royal Society, dated at London the 9th instant.

"A miserable comet made its appearance to Mr. Nathan Pigot, in his observatory at Yorkshire, on the 19th past, and the weather has been so hazy in the evenings that it has scarce been observed since. It was on the 19th

	h.	m.	Right Ascen.	North Dec.
"at	11	15	41 0 0	3° 10′
"On the 20th	10	54	40 0 0	4 32

"On the 21st it was seen in the place where it was expected; but the night was too hazy to observe it.

"It appears like a nebula, with a diameter of about two minutes of a degree; the nucleus faint. It is seen with difficulty when the wires of the instrument are illuminated, but is not visible with an open glass."—Mr. Pigot.

"Nov. 29th. It was seen near the chin of Aries, and appeared like a nebulous star: as there was some moon-light, it was difficult to find it.

"Dec. 1st. It was removed near the preceding eye of Aries; but conceiving other astronomers who had fixed instruments, have noted its place, he has not calculated the distance from any known star."—Mr. Herschell.

With great esteem, I have the honor to be, &c. B. Franklin.

ON BALLOONS, AND THEIR PROBABLE IMPORTANCE.

To Dr. Ingenhausz.

Dear Friend, *Passy, Jan.* 16, 1784.

I have this day received your favor of the 2d instant. Every information in my power respecting the balloons I sent you just before Christmas, contained in copies of my letters to Sir Joseph Banks. There is no secret in the affair, and I make no doubt that a person coming from you would easily obtain a sight of the different balloons of Mongolfier and Charles, with all the instructions wanted: and if you undertake to make one, I think it extremely proper and

necessary to send an ingenious man here for that purpose; otherwise, for want of attention to some particular circumstance, or of not being acquainted with it, the experiment might miscarry, which, in an affair of so much public expectation, would have bad consequences, draw upon you a great deal of censure, and affect your reputation. It is a serious thing to draw out from their affairs all the inhabitants of a great city and its environs, and a disappointment makes them angry. At Bourdeaux lately, a person who pretended to send up a balloon, and had received money from many people, not being able to make it rise, the populace were so exasperated that they pulled down his house, and had like to have killed him.

It appears, as you observe, to be a discovery of great importance, and what may possibly give a new turn to human affairs. Convincing sovereigns of the folly of wars, may perhaps be one effect of it; since it will be impracticable for the most potent of them to guard his dominions. Five thousand balloons capable of raising two men each could not cost more than five ships of the line: and where is the prince who can afford so to cover his country with troops for its defence, as that ten thousand men descending from the clouds might not in many places do an infinite deal of mischief, before a force could be brought together to repel them? It is a pity that any national jealousy should, as you imagine it may, have prevented the English from prosecuting the experiment, since they are such ingenious mechanicians, that in their hands it might have made a more rapid progress towards perfection, and all the utility it is capable of affording. The balloon of Messrs. Charles and Robert was really filled with inflammable air. The quantity being great, it was expensive, and tedious filling, requiring two or three days and nights constant labor. It had a *soupape*, or valve, near the top, which they could open by pulling a string, and thereby let out some air when they had a mind to descend; and they discharged some of their ballast of sand when they would rise again. A great deal of air must have been let out when they landed, so that the loose part might envelope one of them; yet the car being lightened by that one getting out of it, there was enough left to carry up the other rapidly. They had no fire with them. That is used only in M. Mongolfier's globe, which is open at bottom and straw constantly burnt to keep it up. This kind is sooner and cheaper filled; but must be of much greater dimensions to carry up the same weight; since air rarefied by heat is only twice as light as common air, and inflammable air ten times lighter. Mons. Morveau, a famous chemist at Dijon, has discovered an inflammable air

that will cost only a 25th part of the price of what is made by oil of vitriol poured on iron filings. They say it is made from sea-coal. Its comparative weight is not mentioned. I am as ever, my dear friend, yours most affectionately, B. FRANKLIN.

ON FIRE.

To B. VAUGHAN.

MY DEAR FRIEND, *Passy, April* 29, 1784.

I received your kind letters of the 16th and 20th instant. I thank you for your philosophical news. We have none here. I see your philosophers are in the way of finding out at last what fire is. I have long been of opinion that it exists every where in the state of a subtile fluid. That too much of that fluid in our flesh gives us the sensation we call heat; too little, cold. Its vibrations, light. That all solid or fluid substances which are inflammable have been composed of it; their dissolution in returning to their original fluid state, we call fire. This subtile fluid is attracted by plants and animals in their growth, and consolidated. Is attracted by other substances, thermometers, &c. &c., variously; has a particular affinity with water, and will quit many other bodies to attach itself to water, and go off with it in evaporation. Adieu. Yours most sincerely, B. F.

METEOROLOGICAL IMAGINATIONS AND CONJECTURES.

May, 1784.

THERE seems to be a region high in the air over all countries, where it is always winter, where frost exists continually; since in the midst of summer on the surface of the earth ice falls often from above, in the form of hail.

Hail-stones of the great weight we sometimes find them, did not probably acquire their magnitude before they began to descend. The air being 400 times rarer than water, is unable to support it but in the shape of vapor, a state in which its particles are separated. As soon as they are condensed by the cold of the upper regions so as to form a drop, that drop begins to fall. If it freezes into a grain of ice, that ice descends. In descending, both the drop of water and the grain of ice are augmented by particles of the vapor they pass

through in falling, and which they condense by their coldness, and attach to themselves.

It is possible that in summer, much of what is rain when it arrives at the surface of the earth, might have been snow when it began its descent; but, being thawed in passing through the warm air near that surface, is changed from snow into rain.

How immensely cold must be the original particle of hail, which forms the centre of the future hail-stone, since it is capable of communicating sufficient cold, if I may so speak,[1] to freeze all the mass of vapor condensed round it, and form a lump of perhaps six or eight ounces in weight!

When in summer-time the sun is high, and long every day above the horizon, his rays strike the earth more directly and with longer continuance than in winter; hence the surface is more heated, and to a greater depth, by the effect of those rays.

When rain falls on the heated earth, and soaks down into it, it carries down with it a great part of the heat, which by that means descends still deeper.

The mass of earth, to the depth perhaps of 30 feet, being thus heated to a certain degree, continues to retain its heat for some time. Thus the first snows that fall in the beginning of winter, seldom lie long on the surface, but are soon melted and absorbed. After which the winds that blow over the country on which the snows had fallen, are not rendered so cold as they would have been by those snows, if they had remained. The earth, too, thus uncovered by the snow, which would have reflected the sun's rays, now absorbs them, receiving and retaining the warmth they afford. And thus the approach of the severity of winter is retarded; and the extreme degree of its cold is not always at the time we might expect it, viz. when the sun is at his greatest distance and the days the shortest, but some time after that period, according to the English proverb, which says,

> As the day lengthens,
> The cold strengthens;

the causes of refrigeration continuing to operate, while the sun returns too slowly, and his force continues too weak, to counteract them.

During several of the summer months of the year 1783, when the effect of the sun's rays to heat the earth in these northern regions should have been greatest,

[1] *If I may so speak*, because perhaps it is not by communicating cold to the particles of vapor that it freezes them, but by depriving them of their heat.

there existed a constant fog over all Europe. This fog was of a permanent nature; it was dry, and the rays of the sun seemed to have little effect towards dissipating it, as they easily do a moist fog arising from water. They were indeed rendered so faint in passing through it, that when collected in the focus of a burning-glass they would scarce kindle brown paper; of course their summer effect in heating the earth was exceedingly diminished.

Hence the surface was early frozen.

Hence the first snows remained on it unmelted, and received continual additions.

Hence the air was more chilled, and the winds more severely cold.

Hence perhaps the winter of 1783-4 was more severe than any that had happened for many years.

The cause of this universal fog is not yet ascertained. Whether it was adventitious to this earth, and merely a smoke proceeding from the consumption by fire of some of those great burning balls or globes which we happen to meet with in our rapid course round the sun, and which are sometimes seen to kindle and be destroyed in passing our atmosphere, and whose smoke might be attracted and retained by our earth; or, whether it was the vast quantity of smoke long continuing to issue during the summer from Hecla in Iceland, and that other volcano which arose out of the sea near that island, which smoke might be spread by various winds over the northern part of the world, is yet uncertain.

It seems, however, worth the inquiry, whether other hard winters recorded in history, were preceded by similar permanent and widely-extended summer fogs. Because, if found to be so, men might from such fogs conjecture the probability of a succeeding hard winter, and of the damages to be expected by the breaking up of frozen rivers at the approach of spring, and take such measures as are possible and practicable to secure themselves and effects from the mischiefs that attended the last.

PHYSICAL AND METEOROLOGICAL CONJECTURES, OBSERVATIONS AND SUPPOSITIONS. 1756.

THE particles of air are kept at a distance from each other by their mutual repulsion.

Even these particles mutually and equally repelling each other, must form an equilateral triangle.

All the particles of air gravitate towards the earth, which gravitation compresses them, and shortens the sides of the triangles, otherwise their mutual repellency would force them to greater distances from each other.

Whatever particles of other matter (not endued with that repellency) are supported in air, must adhere to the particles of air, and be supported by them; for in the vacancies there is nothing they can rest on.

Air and water mutually attract each other. Hence water will dissolve in air, as salt in water.

The specific gravity of matter is not altered by dividing the matter, though the superficies may be increased. Sixteen leaden bullets of an ounce each, weigh as much in water as one of a pound whose superficies is less.

Therefore the supporting of salt in water is not owing to its superficies being increased.

A lump of salt, though laid at rest at the bottom of a vessel of water, will dissolve therein, and its parts move every way till equally diffused in the water; therefore there is a mutual attraction between water and salt. Every particle of water assumes as many of salt as can adhere to it; when more is added, it precipitates and will not remain suspended.

Part of a fluid having more of what it dissolves, will communicate to other parts that have less. This very salt water coming in contact with fresh, communicates its saltness till all is equal, and the sooner if there is but a little motion of the water. Even earth will dissolve and mix with air. A stroke of a horse's hoof in a hot dusty road, will raise a cloud of dust, that shall expand every way till perhaps near as big as a common house. 'Tis not by mechanical motion communicated to the particles of dust, by the hoof, that they fly so far, nor by the wind that they spread wide: but the air near the ground more heated by the hot dust struck into it is rarefied and rises, and in rising mixes with cooler air, and communicates of its dust to it, and 'tis at length so diffused as to become invisible. Quantities of dust are thus carried up in dry seasons; showers wash it from the air, and bring it down again. For water attracting it stronger, it quits the air and adheres to the water.

Air suffering continual changes in the degrees of its heat, from various causes and circumstances, and consequently changes in its specific gravity, must therefore be in continual motion.

Water in the same manner will dissolve in air, every particle of air assuming one or more particles of water; when too much is added, it precipitates in rain.

But there not being the same contiguity between the particles of air as of water, the solution of water in air is not carried on without a motion of the air, so as to cause a fresh accession of dry particles.

A small quantity of fire mixed with water, or degree of heat therein, so weakens the cohesion of its particles, that those on the surface easily quit it, and adhere to the particles of air.

A greater degree of heat is required to break the cohesion between water and air.

Air moderately heated will support a greater quantity of water invisibly than cold air; for its particles being by heat repelled to a greater distance from each other, thereby more easily keep the particles of water that are annexed to them from running into cohesions that would obstruct, reflect, or refract the light.

Hence when we breathe in warm air, though the same quantity of moisture may be taken up from the lungs as when we breathe in cold air, yet that moisture is not so visible.

Water being extremely heated, i. e. to the degree of boiling, the particles in quitting it so repel each other as to take up vastly more space than before, and by that repellency support themselves, expelling air from the space they occupy. That degree of heat being lessened, they again mutually attract, and having no air-particles mixed to adhere to, by which they might be supported and kept at a distance, they instantly fall, coalesce, and become water again.

The water commonly diffused in our atmosphere, receives such a degree of heat from the sun or otherwise, as water has when boiling; it is not therefore supported by such heat, but by adhering to air.

Water being dissolved in and adhering to air, that air will not readily take up oil, because of the natural repellency between water and oil.

Hence oils evaporate but slowly, the air having generally a quantity of dissolved water.

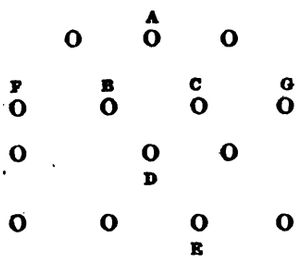
Oil being heated extremely, the air that approaches its surface will be also heated extremely; the water then quitting it, it will attract and carry off oil which can now adhere to it. Hence the quick evaporation of oil heated to a degree.

Oil being dissolved in air, the particles to which it adheres will not take up water.

Hence the suffocating nature of air impregnated with burnt grease, as from snuffs of candles and the like. A certain quantity of moisture should be every moment discharged and taken away from the lungs; air that has been frequently breathed, is already overloaded, and for that reason can take no more, so will not answer the end. Greasy air refuses to touch it. In both cases suffocation for want of the discharge.

As air will attract and support many other substances, a particle of air loaded with adhering water, or any other matter, is heavier than before, and would descend.

The atmosphere supposed at rest, a loaded descending particle must act with a force on the particles it passes between or meets with, sufficient to overcome in some degree their mutual repellency, and push them nearer to each other.



Thus, supposing the particles A B C D, and the others near them, to be at the distance caused by their mutual repellency, (confined by their common gravity,) if A would descend to E, it must pass between B and C: when it comes between B and C, it will be nearer to them than before, and must either have pushed them nearer to F and G, contrary to their mutual repellency, or press through by a force exceeding its repellency with them. It then approaches D, and to move it out of the way must act on it with a force sufficient to overcome its repellency with the two next lower particles by which it is kept in its present situation. Every particle of air, therefore, will bear any load inferior to the force of these repulsions.

Hence the support of fogs, mists, clouds.

Very warm air clear, though supporting a very great quantity of moisture, will grow turbid and cloudy on the mixture of a colder air; as foggy air will grow clear by warming.

Thus the sun shining on a morning fog, dissipates it. Clouds are seen to waste in a sunshiny day.

But cold condenses and renders visible the vapor. A tankard or decanter filled with cold water, will condense the moisture of warm clear air on its outside, where it becomes visible as dew, coalesces into drops, and descends in little streams.

The sun heats the air of our atmosphere most near the surface of the earth; for there, besides the direct rays, there are many reflections. Moreover, the earth itself being heated, communicates of its heat to the neighboring air.

The higher regions having only the direct rays of the sun passing through them, are comparatively very cold. Hence the cold air on the tops of mountains, and snow on some of them all the year, even in the torrid zone. Hence hail in summer.

If the atmosphere were all of it both above and below, always of the same temperature as to cold or heat, then the upper air would always be *rarer* than the lower, because the pressure on it is less; consequently lighter, and therefore would keep its place.

But the upper air may be more condensed by cold than the lower air by pressure, the lower more expanded by heat than the upper for want of pressure. In such case the upper air will become the heavier, the lower the lighter.

The lower region of air being heated and expanded, heaves up and supports for some time the colder heavier air above, and will continue to support it while the equilibrium is kept. Thus water is supported in an inverted open glass, while the equilibrium is maintained by the equal pressure upwards of the air below; but the equilibrium by any means breaking, the water descends on the heaviest side, and the air rises into its place.

The lifted heavy cold air over a heated country, becoming by any means unequally supported, or unequal in its weight, the heaviest part descends first, and the rest follows impetuously; hence gusts after heats, and hurricanes in hot climates. Hence the air of gusts and hurricanes cold though in hot climes and seasons, it coming from above.

The cold air descending from above, as it penetrates our warm region full of watery particles, condenses them, renders them visible, forms a cloud, thick and dark, overcasting sometimes at once large and extensively; sometimes when seen at a distance small at first, gradually increasing, the cold edge or surface of the cloud condensing the vapors next it, which form smaller clouds that join it, increase its bulk, it descends with the wind, and its acquired weight, draws nearer the earth, grows denser with continual additions of water, and discharges heavy showers.

Small black clouds thus appearing in a clear sky in hot climates, portend storms, and warn seamen to hand their sails.

The earth turning on its axis in about 24 hours, the equatorial parts must move about 15 miles in each minute; in northern and southern latitudes this motion is gradually less to the poles, and there nothing.

If there was a general calm over the face of the earth, it must be by the airs moving in every part as fast as the earth or sea it covers.

He that sails or rides has insensibly the same degree of motion as the ship or coach with which he is connected. If the ship strikes the shore, or the coach stops suddenly, the motion continuing in the man, he is thrown forward. If a man were to jump from the land into a swift-sailing ship, he would be thrown backward, or towards the stern, not having at first the motion of the ship.

He that travels by sea or land towards the equinoctial, gradually acquires motion; from it, loses.

But if a man were taken up from lat. 40. (where suppose the earth's surface to move 12 miles per minute,) and immediately set down at the equinoctial, without changing the motion he had, his heels would be struck up, he would fall westward. If taken up from the equinoctial, and set down in lat. 40. he would fall eastward.

The air under the equator and between the tropics being constantly heated and rarefied by the sun, rises. Its place is supplied by air from northern and southern latitudes, which coming from parts where the earth and air had less motion, and not suddenly acquiring the quicker motion of the equatorial earth, appears an east wind blowing westward, the earth moving from west to east, and slipping under the air.

Thus when we ride in a calm, it seems a wind against us. If we ride with the wind and faster, even that will seem a small wind against us.

The air rarefied between the tropics, and rising, must flow in the north and south higher region: before it rose it had acquired the greatest motion the earth's rotation could give it. It retains some degree of this motion, and descending in higher latitudes where the earth's motion is less, will appear a westerly wind, yet tending towards the equinoctial parts to supply the vacancy occasioned by the air of the lower regions flowing thitherwards.

Hence our general cold winds are about the north-west, our summer cold gusts the same.

The air in sultry weather, though not cloudy, has a kind of haziness in it, which makes objects at distances appear dull and indistinct. This haziness is occasioned by the great quantity of moisture equally diffused in that air.

When by the cold wind blowing down among it, it is condensed into clouds and falls in rain, the air becomes purer and clearer: hence after gusts, distant objects appear distinct, their figures sharply terminated.

Extreme cold winds congeal the surface of the earth, by carrying off its fire. Warm winds afterwards blowing over that frozen surface, will be chilled by it. Could that frozen surface be turned under, and a warmer turned up from beneath it, these warm winds would not be chilled so much. The surface of the earth is also sometimes much heated by the sun; and such heated surface not being changed, heats the air that moves over it.

Seas, lakes, and great bodies of water agitated by the winds, continually change surfaces; the cold surface in winter is turned under by the rolling of the waves (*and the air over it*), and a warmer turned up: in summer the warm turned under, and cooler turned up. Hence the more equal temper of sea-water, and the air over it. Hence in winter, winds from the sea seem warm, winds from the land cold. In summer the contrary.

Therefore the lakes north-west of us,[1] as they are not so much frozen nor so apt to freeze as the earth, rather moderate than increase the coldness of our winter winds.

The air over the sea being warmer, and therefore lighter in winter than the air over the frozen land, may be another cause of our general north-west winds; which blow off to sea at right angles from our North-American coast. The warm light sea air rising, the heavy cold land air pressing into its place.

Heavy fluids descending, frequently form eddies or whirlpools, as is seen in a funnel, where the water acquires a circular motion, receding every way from a centre, and leaving a vacancy in the middle, greatest above, and lessening downwards, like a speaking trumpet, its biggest end upwards.

Air ascending or descending may form the same kind of eddies or whirlings, the parts of air acquiring a circular motion, and receding from the middle of the circle by a centrifugal force, and leaving there a vacancy, if descending, greatest above, and lessening downwards; if ascending, greatest below and lessening upwards, like a speaking trumpet standing its big end on the ground.

When the air descends with violence in some places, it may rise with equal violence in others, and form both kinds of whirlwinds.

The air in its whirling motion receding every way from the centre or axis of

[1] In Pennsylvania.

the trumpet, leaves there a vacuum; which cannot be filled through the sides, the whirling air as an arch preventing; it must then press in at the open ends.

The greatest pressure inwards must be at the lower end, the greatest weight of the surrounding atmosphere being there. The air entering rises within and carries up dust, leaves, and even heavier bodies that happen to be in its way, as the eddy or whirl passes over land.

If it passes over water, the weight of the surrounding atmosphere forces up the water into the vacuity, part of which by degrees joins with the whirling air, and adding weight and receiving accelerated motion, recedes still farther from the centre or axis of the trumpet as the pressure lessens, and at last is broken into small particles, and so united with air as to be supported by it, and become black clouds at the top of the trump.

Thus these eddies may be whirlwinds at land, water-spouts at sea. A body of water so raised may be suddenly let fall when the motion, &c. has not strength to support it, or the whirling arch is broken so as to let in the air. Falling in the sea, it is harmless, unless ships happen to be under it. But if in the progressive motion of the whirl it has moved from the sea over to the land, and there breaks; sudden, violent, and mischievous torrents are the consequence.

B. FRANKLIN.

ON ELECTRICITY.

A THREE WHEELED CLOCK—GRAVITATION OF BODIES AFFECTED BY SUN AND MOON—CONJECTURE ON TIDES.

To Dr. INGENHAUSZ.

MY DEAR FRIEND, *Passy, April* 29, 1785.

I believe my last letter to you was of May 16, 1783. I am therefore much in your debt as a correspondent. I have now before me all your letters since received, and shall endeavor as well as I can to answer them. I confess that a man who can leave so many letters so long unanswered, does not deserve so valuable a correspondence as yours. But I am grown very old, being now in my eightieth year: I am engaged in much business that must not be neglected. Writing becomes more and more irksome to me: I grow more indolent: philosophic discussions, not being urgent like business, are postponed from time to time till they are forgotten; besides, I have been these twenty months past afflicted with the stone, which is always giving me more or less uneasiness, unless when I am laid in bed; and when I would write, it

interrupts my train of thinking, so that I lay down my pen, and seek some light amusement.

I consent to your request concerning my paper on the weathercock struck by lightning.[1] Dispose of it as you please.

You will find an account of the first great stroke I received, in pages 160, 161, of my book, 5th edition, 1774.[2] The second I will now give you. I had a paralytic patient in my chamber, whose friends brought him to receive some electric shocks: I made them join hands so as to receive the shock at the same time, and I charged two large jars to give it. By the number of those people I was obliged to quit my usual standing, and placed myself inadvertently under an iron hook which hung from the ceiling down to within two

---

[1] See WRITINGS, Part IV.

[2] [Extract from the same.]

Turkey killed by electricity—Effect of a shock on the operator in making the experiment.

As Mr. Franklin, in a former letter to Mr. Collinson, mentioned his intending to try the power of a very strong electrical shock upon a turkey, that gentleman accordingly has been so very obliging as to send an account of it, which is to the following purpose.

He made first several experiments on fowls, and found, that two large thin glass jars gilt, holding each about six gallons, were sufficient, when fully charged, to kill common hens outright; but the turkies, though thrown into violent convulsions, and then lying as dead for some minutes, would recover in less than a quarter of an hour. However, having added three other such to the former two, though not fully charged, he killed a turkey of about ten pounds weight, and believes that they would have killed a much larger. He conceited, as himself says, that the birds killed in this manner ate uncommonly tender.

In making these experiments, he found, that a man could, without great detriment, bear a much greater shock than he had imagined: for he inadvertently received the stroke of two of these jars through his arms and body, when they were very near fully charged. It seemed to him an universal blow throughout the body from head to foot, and was followed by a violent quick trembling in the trunk, which went off gradually, in a few seconds. It was some minutes before he could recollect his thoughts, so as to know what was the matter; for he did not see the flash, though his eye was on the spot of the prime conductor, from whence it struck the back of his hand; nor did he hear the crack, though the by-standers said it was a loud one; nor did he particularly feel the stroke on his hand, though he afterwards found it had raised a swelling there, of the bigness of half a pistol-bullet. His arms and the back of the neck felt somewhat numbed the remainder of the evening, and his breast was sore for a week after, as if it had been bruised. From this experiment may be seen the danger, even under the greatest caution, to the operator, when making these experiments with large jars; for it is not to be doubted, that several of these fully charged would as certainly, by increasing them, in proportion to the size, kill a man, as they before did a turkey.

N. B. The original of this letter, which was read at the Royal Society, has been mislaid.

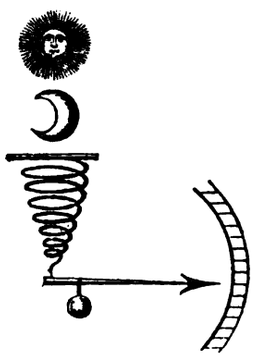
inches of my head, and communicated by wire with the outside of the jars. I attempted to discharge them, and in fact did so; but I did not perceive it, though the charge went through me, and not through the persons I intended it for. I neither saw the flash, heard the report, nor felt the stroke. When my senses returned, I found myself on the floor. I got up, not knowing how that had happened. I then again attempted to discharge the jars; but one of the company told me they were already discharged, which I could not at first believe, but on trial found it true. They told me they had not felt it, but they saw I was knocked down by it, which had greatly surprised them. On recollecting myself, and examining my situation, I found the case clear. A small swelling rose on the top of my head, which continued sore for some days; but I do not remember any other effect, good or bad. The stroke you received, and its consequences, are much more curious. I communicated that part of your letter to an operator, encouraged by government here to electrify epileptic and other poor patients, and advised his trying the practice on mad people according to your opinion. I have not heard whether he has done it.

I do not know that my contrivance of a clock with three wheels only, which showed hours, minutes, and seconds, has ever been published. I have seen several of them here at Paris that were made by Mr. Whitehurst, and sent over I believe by Mr. Magellan. You are welcome to do what you please with it. Mr. Whitehurst's invention is very simple, and should be very effectual, provided the foot of the rod and the situation of the clock are invariably fixed, so as never to be at a greater or less distance from one another, which may be by fixing both in a strait-grained piece of wood of about four feet long; wood not changing its dimensions the length-way of the grain, by any common degree of heat or cold. But this cannot be trusted to in the wood of a clock case, because in sawing boards the grain is frequently crossed, and moisture and dryness will change their dimensions.

You are at liberty also to publish, if you think fit, the experiment of the globe floating between two liquors. I suppose you remember to have seen it on my chimney-piece. Though it is a matter of no utility. Something of the same nature has been done more than an hundred years since by another person, I forget who.

What I formerly mentioned to you of hanging a weight on a spiral spring, to discover if bodies gravitated differently to the earth during the conjunctions of the sun and moon, compared with other times, was this. We suppose that by

the force of gravity in those luminaries, the water of the ocean, an immense weight, is elevated so as to form the tides: if that be so, might we not expect that an iron ball of a pound weight, suspended by a fine spiral spring, should, when the sun and moon are together both above it, be a little attracted upwards or rendered lighter, so as to be drawn up a little by the spring on which it depends, and the contrary when they are both below it. The quantity, though very small, might perhaps be rendered visible by a contrivance like this in the margin. It is not difficult to make this experiment, but I have never made it. With regard to the tides, I doubt the opinion of there being but two high waters and two low waters existing at the same time on the globe. I rather think there are many, and those at the distance of about one hundred leagues from each other. The tides found in the river Amazons seem to favor this opinion. Observations hereafter in the isles of the Pacific Ocean, may confirm or refute it.



If I were in a situation where I could be a little more master of my time, I would, as you desire, write my ideas on the subject of chimnies: they might, I think, be useful. For by what I see everywhere the subject seems too little understood, which occasions much inconvenience and fruitless expense. But besides being harassed by too much business, I am exposed to numberless visits, some of kindness and civility, many of mere idle curiosity, from strangers of America and of different parts of Europe, as well as the inhabitants of the provinces who come to Paris. These devour my hours, and break my attention, and at night I often find myself fatigued without having done any thing. Celebrity may for a while flatter one's vanity, but its effects are troublesome. I have begun to write two or three things, which I wish to finish before I die; but I sometimes doubt the possibility.

* * * * * *

B. FRANKLIN.

Plate IV. *to face Page 479.*

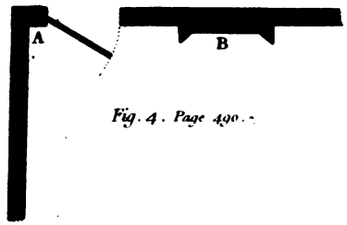


Fig. 4. Page 490.

Fig. 3. Page 489.

Fig. 2. Page 485.

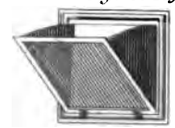


Fig. 1. Page 480.

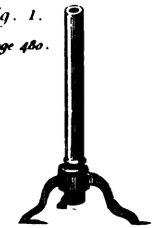


Fig. 6. Page 491.

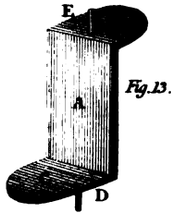
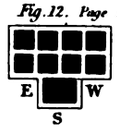


Fig. 13. Page 504.

Fig. 12. Page 504.



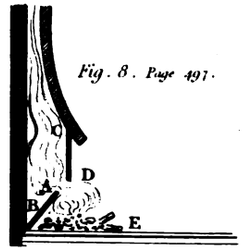


Fig. 8. Page 497.

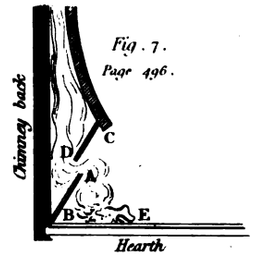


Fig. 7. Page 496.

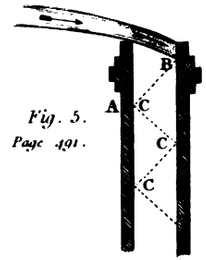
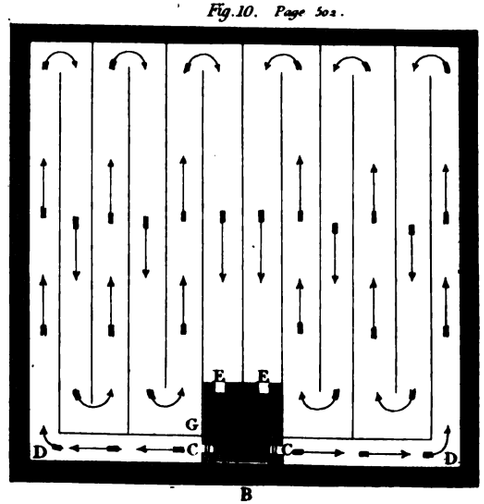


Fig. 5. Page 491.

Fig. 10. Page 502.



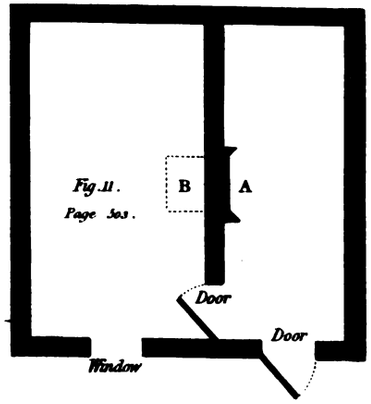


Fig. 11. Page 503.

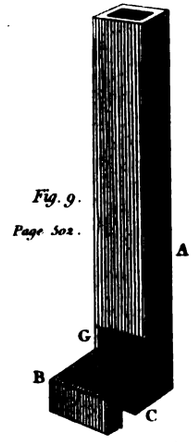


Fig. 9. Page 502.

London. Published by Henry Colburn, Conduit Street. May 1818.

ON THE CAUSES AND CURE OF SMOKY CHIMNIES.

To Dr. Ingenhausz.

Dear Friend, *At sea, Aug.* 28, 1785.

In one of your letters, a little before I left France, you desired me to give you in writing my thoughts upon the construction and use of chimnies, a subject you had sometimes heard me touch upon in conversation. I embrace willingly this leisure afforded by my present situation to comply with your request, as it will not only show my regard to the desires of a friend, but may at the same time be of some utility to others; the doctrine of chimnies appearing not to be as yet generally well understood, and mistakes respecting them being attended with constant inconvenience, if not remedied, and with fruitless expense, if the true remedies are mistaken.

Those who would be acquainted with this subject, should begin by considering on what principle smoke ascends in any chimney. At first, many are apt to think that smoke is in its nature and of itself specifically lighter than air, and rises in it for the same reason that cork rises in water. These see no cause why smoke should not rise in the chimney, though the room be ever so close. Others think there is a power in chimnies to *draw up* the smoke, and that there are different forms of chimnies which afford more or less of this power. These amuse themselves with searching for the best form. The equal dimensions of a funnel in its whole length is not thought artificial enough, and it is made, for fancied reasons, sometimes tapering and narrowing from below upwards, and sometimes the contrary, &c. A simple experiment or two may serve to give more correct ideas. Having lit a pipe of tobacco, plunge the stem to the bottom of a decanter half filled with cold water; then putting a rag over the bowl, blow through it and make the smoke descend in the stem of the pipe, from the end of which it will rise in bubbles through the water; and being thus cooled, will not afterwards rise to go out through the neck of the decanter, but remain spreading itself and resting on the surface of the water. This shows that smoke is really heavier than air, and that it is carried upwards only when attached to, or acted upon, by air that is heated, and thereby rarefied and rendered specifically lighter than the air in its neighborhood.

Smoke being rarely seen but in company with heated air, and its upward

motion being visible, though that of the rarefied air that drives it is not so, has naturally given rise to the error.

I need not explain to you, my learned friend, what is meant by rarefied air; but if you make the public use you propose of this letter, it may fall into the hands of some who are unacquainted with the term and with the thing. These then may be told, that air is a fluid which has weight as well as others, though about eight hundred times lighter than water. That heat makes the particles of air recede from each other and take up more space, so that the same weight of air heated will have more bulk, than equal weights of cold air which may surround it, and in that case must rise, being forced upwards by such colder and heavier air, which presses to get under it and take its place. That air is so rarefied or expanded by heat, may be proved to their comprehension, by a lank blown bladder, which, laid before a fire, will soon swell, grow tight, and burst.

Another experiment may be to take a glass tube about an inch in diameter, and twelve inches long, open at both ends and fixed upright on legs, so that it need not be handled, for the hands might warm it. At the end of a quill fasten five or six inches of the finest light filament of silk, so that it may be held either above the upper end of the tube or under the lower end, your warm hand being at a distance by the length of the quill. (See the plate, fig. 1.) If there were any motion of air through the tube, it would manifest itself by its effect on the silk; but if the tube and the air in it are of the same temperature with the surrounding air, there will be no such motion, whatever may be the form of the tube, whether crooked or strait, narrow below and widening upwards, or the contrary; the air in it will be quiescent. Warm the tube, and you will find, as long as it continues warm, a constant current of air entering below and passing up through it, till discharged at the top; because the warmth of the tube being communicated to the air it contains, rarefies that air and makes it lighter than the air without, which therefore presses in below, forces it upwards, and follows and takes its place, and is rarefied in its turn. And, without warming the tube, if you hold under it a knob of hot iron, the air thereby heated will rise and fill the tube, going out at its top; and this motion in the tube will continue as long as the knob remains hot, because the air entering the tube below is heated and rarefied by passing near and over that knob.

That this motion is produced merely y the difference of specific gravity

between the fluid within and that without the tube, and not by any fancied form of the tube itself, may appear by plunging it into water contained in a glass jar a foot deep, through which such motion might be seen. The water within and without the tube being of the same specific gravity, balance each other, and both remain at rest. But take out the tube, stop its bottom with a finger, and fill it with olive oil, which is lighter than water, then stopping the top, place it as before, its lower end under water, its top a very little above: as long as you keep the bottom stopt the fluids remain at rest, but the moment it is unstopt, the heavier enters below, forces up the lighter, and takes its place. And the motion then ceases, merely because the new fluid cannot be successively made lighter, as air may be by a warm tube.

In fact, no form of the funnel of a chimney has any share in its operation or effect respecting smoke, except its height. The longer the funnel, if erect, the greater its force when filled with heated and rarefied air, to *draw* in below and drive up the smoke, if one may, in compliance with custom, use the expression *draw*, when in fact it is the superior weight of the surrounding atmosphere that *presses* to enter the funnel below, and so *drives up* before it the smoke and warm air it meets with in its passage.

I have been the more particular in explaining these first principles, because, for want of clear ideas respecting them, much fruitless expense has been occasioned; not only single chimnies, but in some instances within my knowledge, whole stacks having been pulled down and rebuilt with funnels of different forms, imagined more powerful in *drawing* smoke; but having still the same height and the same opening below, have performed no better than their predecessors.

What is it then which makes a *smoky chimney*, that is, a chimney which, instead of conveying up all the smoke, discharges a part of it into the room, offending the eyes and damaging the furniture?

The causes of this effect, which have fallen under my observation, amount to *nine*, differing from each other, and therefore requiring different remedies.

1. *Smoky chimnies in a new house, are such, frequently from mere want of air.* The workmanship of the rooms being all good, and just out of the workman's hand, the joints of the boards of the flooring, and of the pannels of wainscotting are all true and tight, the more so as the walls, perhaps not yet thoroughly dry, preserve a dampness in the air of the room which keeps the wood-work swelled and close. The doors and the sashes, too, being worked with

truth, shut with exactness, so that the room is as tight as a snuff-box, no passage being left open for air to enter, except the key-hole, and even that is sometimes covered by a little dropping shutter. Now if smoke cannot rise but as connected with rarefied air, and a column of such air, suppose it filling the funnel, cannot rise, unless other air be admitted to supply its place; and if, therefore, no current of air enter the opening of the chimney, there is nothing to prevent the smoke coming out into the room. If the motion upwards of the air in a chimney that is freely supplied be observed by the rising of the smoke or a feather in it, and it be considered that in the time such feather takes in rising from the fire to the top of the chimney a column of air equal to the content of the funnel must be discharged, and an equal quantity supplied from the room below, it will appear absolutely impossible that this operation shou'd go on if the tight room is kept shut; for were there any force capable of drawing constantly so much air out of it, it must soon be exhausted like the receiver of an air-pump, and no animal could live in it. Those therefore who stop every crevice in a room to prevent the admission of fresh air, and yet would have their chimney carry up the smoke, require inconsistencies, and expect impossibilities. Yet under this situation, I have seen the owner of a new house, in despair, and ready to sell it for much less than it cost, conceiving it uninhabitable, because not a chimney in any one of its rooms would carry off the smoke, unless a door or window were left open. Much expense has also frequently been gone into to alter and amend new chimnies which had really no fault; in one house particularly that I knew, of a nobleman in Westminster, that expense amounted to no less than three hundred pounds, *after* his house had been, as he thought, finished and all charges paid. And after all, several of the alterations were ineffectual, for want of understanding the true principles.

Remedies. When you find on trial, that opening the door or a window enables the chimney to carry up all the smoke, you may be sure that want of air *from without* was the cause of its smoking. I say *from without*, to guard you against a common mistake of those who may tell you the room is large, contains abundance of air, sufficient to supply any chimney, and therefore it cannot be that the chimney wants air. These reasoners are ignorant that the largeness of a room, if tight, is in this case of small importance, since it cannot part with a chimney-full of air without occasioning so much vacuum; which it requires a great force to effect, and could not be borne if effected.

It appearing plainly, then, that some of the outward air must be admitted, the question will be, how much is *absolutely necessary?* for you would avoid admitting more, as being contrary to one of your intentions in having a fire, viz. that of warming your room. To discover this quantity, shut the door gradually while a middling fire is burning, till you find that, before it is quite shut, the smoke begins to come out into the room, then open it a little till you perceive the smoke comes out no longer. There hold the door, and observe the width of the open crevice between the edge of the door and the rabbit it should shut into. Suppose the distance to be half an inch, and the door eight feet high, you find thence that your room requires an entrance for air equal in area to ninety-six half inches, or forty-eight square inches, or a passage of six inches by eight. This however is a large supposition, there being few chimnies that, having a moderate opening and a tolerable height of funnel, will not be satisfied with such a crevice of a quarter of an inch; and I have found a square of six by six, or thirty-six square inches, to be a pretty good medium, that will serve for most chimnies. High funnels, with small and low openings, may indeed be supplied through a less space, because for reasons that will appear hereafter, the *force of levity*, if one may so speak, being greater in such funnels, the cool air enters the room with greater velocity, and consequently more enters in the same time. This however has its limits; for experience shows, that no increased velocity, so occasioned, has made the admission of air through the key-hole equal in quantity to that through an open door; though through the door the current moves slowly, and through the key-hole with great rapidity.

It remains then to be considered how and where this necessary quantity of air from without is to be admitted so as to be least inconvenient. For if at the door, left so much open, the air thence proceeds directly to the chimney, and in its way comes cold to your back and heels as you sit before your fire. If you keep the door shut, and raise a little the sash of your window, you feel the same inconvenience. Various have been the contrivances to avoid this, such as bringing in fresh air through pipes in the jambs of the chimney, which, pointing upwards, should blow the smoke up the funnel; opening passages into the funnel above, to let in air for the same purpose. But these produce an effect contrary to that intended; for as it is the constant current of air passing from the room *through the opening of the chimney* into the funnel which prevents the smoke coming out into the room, if you supply the funnel by other means or in other ways with the air it wants, and especially if that air

be cold, you diminish the force of that current, and the smoke in its effort to enter the room finds less resistance.

The wanted air must then *indispensably* be admitted into the room, to supply what goes off through the opening of the chimney. M. Gauger, a very ingenious and intelligent French writer on the subject, proposes with judgment to admit it *above* the opening of the chimney; and to prevent inconvenience from its coldness, he directs its being made to pass in its entrance through winding cavities made behind the iron back and sides of the fire-place, and under the iron hearth-plate; in which cavities it will be warmed, and even heated, so as to contribute much, instead of cooling, to the warming of the room. This invention is excellent in itself, and may be used with advantage in building new houses; because the chimnies may then be so disposed as to admit conveniently the cold air to enter such passages: but in houses built without such views, the chimnies are often so situated, as not to afford that convenience, without great and expensive alterations. Easy and cheap methods, though not quite so perfect in themselves, are of more general utility; and such are the following.

In all rooms where there is a fire, the body of air warmed and rarefied before the chimney is continually changing place, and making room for other air that is to be warmed in its turn. Part of it enters and goes up the chimney, and the rest rises and takes place near the ceiling. If the room be lofty, that warm air remains above our heads as long as it continues warm, and we are little benefited by it, because it does not descend till it is cooler. Few can imagine the difference of climate between the upper and lower parts of such a room, who have not tried it by the thermometer, or by going up a ladder till their heads are near the ceiling. It is then among this warm air that the wanted quantity of outward air is best admitted, with which being mixed, its coldness is abated, and its inconvenience diminished so as to become scarce observable This may be easily done by drawing down about an inch the upper sash of a window; or, if not moveable, by cutting such a crevice through its frame; in both which cases, it will be well to place a thin shelf of the length, to conceal the opening, and sloping upwards to direct the entering air horizontally along and under the ceiling. In some houses the air may be admitted by such a crevice made in the wainscoat, cornice, or plastering, near the ceiling and over the opening of the chimney. This, if practicable, is to be chosen, because the entering cold air will there meet with the warmest rising air from before

the fire, and be soonest tempered by the mixture. The same kind of shelf should also be placed here. Another way, and not a very difficult one, is to take out an upper pane of glass in one of your sashes, fixing it in a tin frame, (plate IV. fig. 2.) giving it two springing angular sides, and then replacing it, with hinges below on which it may be turned to open more or less above. It will then have the appearance of an internal sky-light. By drawing this pane in, more or less, you may admit what air you find necessary. Its position will naturally throw that air up and along the ceiling. This is what is called in France a *Was ist das?* As this is a German question, the invention is probably of that nation, and takes its name from the frequent asking of that question when it first appeared. In England, some have of late years cut a round hole about five inches diameter in a pane of the sash and placed against it a circular plate of tin hung on an axis, and cut into vanes, which, being separately bent a little obliquely, are acted upon by the entering air, so as to force the plate continually round like the vanes of a windmill. This admits the outward air, and by the continual whirling of the vanes, does in some degree disperse it. The noise only is a little inconvenient.

2. A second cause of the smoking of chimnies is, *their openings in the room being too large;* that is, too wide, too high, or both. Architects in general have no other ideas of proportion in the opening of a chimney, than what relate to symmetry and beauty, respecting the dimensions of the room:* while its true proportion, respecting its function and utility, depends on quite other principles; and they might as properly proportion the step in a staircase to the height of the story, instead of the natural elevation of men's legs in mounting. The proportion then to be regarded, is what relates to the height of the funnel. For as the funnels in the different stories of a house are necessarily of different heights or lengths, that from the lowest floor being the highest or longest, and those of the other floors shorter and shorter, till we come to those in the garrets, which are of course the shortest; and the force of draft being, as already said, in proportion to the height of funnel filled with rarefied air; and a current of air from the room into the chimney, sufficient to fill the opening, being necessary to oppose and prevent the smoke coming out into the room; it follows, that the openings of the longest funnels may be larger, and that those of the

* See Notes at the end of this paper, No. I.

shorter funnels should be smaller. For if there be a large opening to a chimney that does not draw strongly, the funnel may happen to be furnished with the air it demands by a partial current entering on one side of the opening, and, leaving the other side free of any opposing current, may permit the smoke to issue there into the room. Much too of the force of draught in a funnel depends on the degree of rarefaction in the air it contains, and that depends on the nearness to the fire of its passage in entering the funnel. If it can enter far from the fire on each side, or far above the fire, in a wide or high opening, it receives little heat in passing by the fire, and the contents of the funnel is by that means less different in levity from the surrounding atmosphere, and its force in drawing consequently weaker. Hence if too large an opening be given to chimnies in upper rooms, those rooms will be smoky: on the other hand, if too small openings be given to chimnies in the lower rooms, the entering air, operating too directly and violently on the fire, and afterwards strengthening the draft as it ascends the funnel, will consume the fuel too rapidly.

Remedy. As different circumstances frequently mix themselves in these matters, it is difficult to give precise dimensions for the openings of all chimnies. Our fathers made them generally much too large; we have lessened them; but they are often still of greater dimension than they should be, the human eye not being easily reconciled to sudden and great changes. If you suspect that your chimney smokes from the too great dimension of its opening, contract it by placing moveable boards so as to lower and narrow it gradually, till you find the smoke no longer issues into the room. The proportion so found will be that which is proper for that chimney, and you may employ the bricklayer or mason to reduce it accordingly. However, as in building new houses, something must be sometimes hazarded, I would make the openings in my lower rooms about thirty inches square and eighteen deep, and those in the upper only eighteen inches square and not quite so deep; the intermediate ones diminishing in proportion as the height of funnel diminished. In the larger openings, billets of two feet long, or half the common length of cord-wood, may be burnt conveniently; and for the smaller, such wood may be sawed into thirds. Where coals are the fuel, the grates will be proportioned to the openings. The same depth is nearly necessary to all, the funnels being all made of a size proper to admit a chimney-sweeper. If in large and elegant rooms custom or fancy should require the appearance of a large chimney, it may be formed of extensive marginal decorations, in marble, &c. In time, per-

haps, that which is fittest in the nature of things may come to be thought handsomest. But at present, when men and women in different countries show themselves dissatisfied with the forms God has given to their heads, waists and feet, and pretend to shape them more perfectly, it is hardly to be expected that they will be content always with the best form of a chimney. And there are some, I know, so bigotted to the fancy of a large noble opening, that rather than change it, they would submit to have damaged furniture, sore eyes, and skins almost smoked to bacon.

3. Another cause of smoky chimnies is, *too short a funnel.* This happens necessarily in some cases, as where a chimney is required in a low building; for, if the funnel be raised high above the roof, in order to strengthen its draught, it is then in danger of being blown down, and crushing the roof in its fall.

Remedies. Contract the opening of the chimney so as to oblige all the entering air to pass through or very near the fire, whereby it will be more heated and rarefied, the funnel itself be more warmed, and its contents have more of what may be called the force of levity, so as to rise strongly and maintain a good draught at the opening.

Or you may in some cases, to advantage, build additional stories over the low building, which will support a high funnel.

If the low building be used as a kitchen, and a contraction of the opening therefore inconvenient, a large one being necessary, at least when there are great dinners, for the free management of so many cooking utensils; in such case I would advise the building of two more funnels joining to the first, and having three moderate openings, one to each funnel, instead of one large one. When there is occasion to use but one, the other two may be kept shut by sliding plates, hereafter to be described;[1] and two or all of them may be used together when wanted. This will indeed be an expense, but not an useless one, since your cooks will work with more comfort, see better than in a smoky kitchen what they are about, your victuals will be cleaner dressed, and not taste of smoke, as is often the case; and to render the effect more certain, a stack of three funnels may be safely built higher above the roof than a single funnel.

The case of too short a funnel is more general than would be imagined, and often found where one would not expect it. For it is not uncommon, in ill-

[1] See Notes at the end of this paper, No. II.

contrived buildings, instead of having a funnel for each room or fire-place, to bend and turn the funnel of an upper room so as to make it enter the side of another funnel that comes from below. By this means the upper room funnel is made short of course, since its length can only be reckoned from the place where it enters the lower room funnel; and that funnel is also shortened by all the distance between the entrance of the second funnel and the top of the stack; for all that part being readily supplied with air through the second funnel, adds no strength to the draught, especially as the air is cold where there is no fire in the second chimney. The only easy remedy here is, to keep the opening shut of that funnel in which there is no fire.

4. Another very common cause of the smoking of chimnies is, *their overpowering one another*. For instance, if there be two chimnies in one large room, and you make fires in both of them, the doors and windows close shut, you will find that the greater and stronger fire shall overpower the weaker, and draw air down its funnel to supply its own demand; which air descending in the weaker funnel will drive down its smoke, and force it into the room. If, instead of being in one room, the two chimnies are in two different rooms, communicating by a door, the case is the same whenever that door is open. In a very tight house, I have known a kitchen chimney on the lowest floor, when it had a great fire in it, overpower any other chimney in the house, and draw air and smoke into its room, as often as the door was opened communicating with the staircase.

Remedy. Take care that every room has the means of supplying itself from without, with the air its chimney may require, so that no one of them may be obliged to borrow from another, nor under the necessity of lending. A variety of these means have been already described.

5. Another cause of smoking is, *when the tops of chimnies are commanded by higher buildings, or by a hill*, so that the wind blowing over such eminences falls like water over a dam, sometimes almost perpendicularly on the tops of the chimnies that lie in its way, and beats down the smoke contained in them.

Remedy. That commonly applied to this case, is a turncap made of tin or plate iron, covering the chimney above and on three sides, open on one side, turning on a spindle, and which, being guided or governed by a vane, always presents its back to the current. This I believe may be generally effectual, though not certain, as there may be cases in which it will not succeed. Raising your funnels, if practicable, so as their tops may be higher, or at least equal

with the commanding eminence, is more to be depended on. But the turning cap, being easier and cheaper, should first be tried. If obliged to build in such a situation, I would choose to place my doors on the side next the hill, and the backs of my chimnies on the further side; for then the column of air falling over the eminence, and of course pressing on that below, and forcing it to enter the doors, or *Was-ist-dases* on that side, would tend to balance the pressure down the chimnies, and leave the funnels more free in the exercise of their functions.

6. There is another case of command, the reverse of that last mentioned. It is where the commanding eminence is farther from the wind than the chimney commanded. To explain this a figure may be necessary. Suppose then a building (Plate IV. figure 3.) whose side A, happens to be exposed to the wind, and forms a kind of dam against its progress; the air obstructed by this dam will, like water, press and search for passages through it; and finding the top of the chimney B, below the top of the dam, it will force itself down that funnel, in order to get through by some door or window open on the side of the building. And if there be a fire in such chimney, its smoke is of course beat down, and fills the room.

Remedy. I know of but one, which is to raise such funnel higher than the roof, supporting it, if necessary, by iron bars. For a turn-cap in this case has no effect, the damm'd up air pressing down through it in whatever position the wind may have placed its opening.

I know a city in which many houses are rendered smoky by this operation. For their kitchens being built behind, and connected by a passage with the houses, and the tops of the kitchen chimnies lower than the top of the houses, the whole side of a street, when the wind blows against its back, forms such a dam as above described; and the wind, so obstructed, forces down those kitchen chimnies (especially when they have but weak fires in them) to pass through the passage and house into the street. Kitchen chimnies, so formed and situated, have another inconvenience. In summer, if you open your upper room windows for air, a light breeze blowing over your kitchen chimney towards the house, though not strong enough to force down its smoke as aforesaid, is sufficient to waft it into your windows, and fill the rooms with it; which, besides the disagreeableness, damages your furniture.

7. Chimnies, otherwise drawing well, are sometimes made to smoke by *the improper and inconvenient situation of a door.* When the door and chimney are

on the same side of the room as in plate IV. figure 4, if the door A, being in the corner, is made to open against the wall which is common, as being there, when open, more out of the way, it follows, that when the door is only opened in part, a current of air rushing in passes along the wall into and across the opening of the chimney B, and flirts some of the smoke out into the room. This happens more certainly when the door is shutting, for then the force of the current is augmented, and becomes very inconvenient to those who, warming themselves by the fire, happen to sit in its way.

The *remedies* are obvious and easy. Either put an intervening skreen from the wall round great part of the fire-place; or, which is perhaps preferable, shift the hinges of your door, so as it may open the other way, and when open throw the air along the other wall.

8. A room, that has no fire in its chimney, is sometimes filled with *smoke which is received at the top of its funnel and descends into the room.* In a former paper[1] I have already explained the descending currents of air in cold funnels; it may not be amiss however to repeat here, that funnels without fires have an effect, according to their degree of coldness or warmth, on the air that happens to be contained in them. The surrounding atmosphere is frequently changing its temperature; but stacks of funnels, covered from winds and sun by the house that contains them, retain a more equal temperature. If, after a warm season, the outward air suddenly grows cold, the empty warm funnels begin to draw strongly upward; that is, they rarefy the air contained in them, which of course rises, cooler air enters below to supply its place, is rarefied in its turn, and rises; and this operation continues till the funnel grows cooler, or the outward air warmer, or both, when the motion ceases. On the other hand, if after a cold season, the outward air suddenly grows warm and of course lighter, the air contained in the cool funnels, being heavier, descends into the room; and the warmer air which enters their tops being cooled in its turn, and made heavier, continues to descend; and this operation goes on, till the funnels are warmed by the passing of warm air through them, or the air itself grows cooler. When the temperature of the air and of the funnels is nearly equal, the difference of warmth in the air between day and night is sufficient to produce these currents, the air will begin to ascend the funnels as the cool of the evening comes on, and this current will continue till perhaps nine or ten

[1] See Notes at the end of this paper, No. II.

o'clock the next morning, when it begins to hesitate; and as the heat of the day approaches, it sets downwards, and continues so till towards evening, when it again hesitates for some time, and then goes upwards constantly during the night, as before mentioned. Now when smoke issuing from the tops of neighboring funnels passes over the tops of funnels which are at the time drawing downwards, as they often are in the middle part of the day, such smoke is of necessity drawn into these funnels, and descends with the air into the chamber.

The *remedy* is to have a sliding plate, hereafter described,[1] that will shut perfectly the offending funnel.

9. Chimnies which generally draw well, do nevertheless sometimes give smoke into the rooms, *it being driven down by strong winds passing over the tops of their funnels*, though not descending from any commanding eminence. This case is most frequent where the funnel is short, and the opening turned from the wind. It is the more grievous, when it happens to be a cold wind that produces the effect, because when you most want your fire, you are sometimes obliged to extinguish it. To understand this, it may be considered that the rising light air, to obtain a free issue from the funnel, must push out of its way or oblige the air that is over it to rise. In a time of calm or of little wind this is done visibly, for we see the smoke that is brought up by that air rise in a column above the chimney. But when a violent current of air, that is, a strong wind, passes over the top of a chimney, its particles have received so much force, which keeps them in a horizontal direction, and follow each other so rapidly, that the rising light air has not strength sufficient to oblige them to quit that direction and move upwards to permit its issue. Add to this, that some of the current passing over that side of the funnel which it first meets with, viz. at A, (plate IV. figure 6.) having been compressed by the resistance of the funnel, may expand itself over the flue, and strike the interior opposite side at B, from whence it may be reflected downwards and from side to side in the direction of the pricked lines c c c.

Remedies. In some places, particularly in Venice, where they have not stacks of chimnies but single flues, the custom is, to open or widen the top of the flue rounding in the true form of a funnel; (plate IV. figure 6.) which some

[1] See Notes at the end of this paper, No. II.]

think may prevent the effect just mentioned; for that the wind blowing over one of the edges into the funnel, may be slanted out again on the other side by its form. I have had no experience of this; but I have lived in a windy country, where the contrary is practised, the tops of the flues being *narrowed* inwards, so as to form a slit for the issue of the smoke, long as the breadth of the funnel, and only four inches wide. This seems to have been contrived on a supposition, that the entry of the wind would thereby be obstructed, and perhaps it might have been imagined, that the whole force of the rising warm air being condensed, as it were, in the narrow opening, would thereby be strengthened, so as to overcome the resistance of the wind. This however did not always succeed; for when the wind was at north-east and blew fresh, the smoke was forced down by fits into the room I commonly sat in, so as to oblige me to shift the fire into another. The position of the slit of this funnel was indeed north-east and south-west. Perhaps if it had lain across the wind, the effect might have been different. But on this I can give no certainty. It seems a matter proper to be referred to experiment. Possibly a turn-cap might have been serviceable, but it was not tried.

Chimnies have not been long in use in England. I formerly saw a book printed in the time of queen Elizabeth, which remarked the then modern improvements of living, and mentioned among others the convenience of chimnies. "Our forefathers," said the author, "had no chimnies. There was in each dwelling-house only one place for a fire, and the smoke went out through a hole in the roof; but now there is scarce a gentleman's house in England that has not at least one chimney in it." When there was but one chimney, its top might then be opened as a funnel, and perhaps, borrowing the form from the Venetians, it was then the flue of a chimney got that name. Such is now the growth of luxury, that in both England and France we must have a chimney for every room, and in some houses every possessor of a chamber, and almost every servant, will have a fire; so that the flues being necessarily built in stacks, the opening of each as a funnel is impracticable. This change of manners soon consumed the firewood of England, and will soon render fuel extremely scarce and dear in France, if the use of coals be not introduced in the latter kingdom as it has been in the former, where it at first met with opposition; for there is extant in the records of one of queen Elizabeth's parliaments, a motion made by a member, reciting, "That many dyers, brewers, smiths, and other artificers of London, had of late taken to the use of pitcoal for their fires, instead of

wood, which filled the air with noxious vapors and smoke, very prejudicial to the health, particularly of persons coming out of the country; and therefore moving that a law might pass to prohibit the use of such fuel (at least during the session of parliament) by those artificers."—It seems it was not then commonly used in private houses. Its supposed unwholesomeness was an objection. Luckily the inhabitants of London have got over that objection, and now think it rather contributes to render their air salubrious, as they have had no general pestilential disorder since the general use of coals, when, before it, such were frequent. Paris still burns wood at an enormous expense, continually augmenting, the inhabitants having still that prejudice to overcome. In Germany you are happy in the use of stoves, which save fuel wonderfully: your people are very ingenious in the management of fire; but they may still learn something in that art from the Chinese,[1] whose country being greatly populous and fully cultivated, has little room left for the growth of wood, and having not much other fuel that is good, have been forced upon many inventions during a course of ages, for making a little fire go as far as possible.

I have thus gone through all the common causes of the smoking of chimnies that I can at present recollect as having fallen under my observation; communicating the remedies that I have known successfully used for the different cases, together with the principles on which both the disease and the remedy depend, and confessing my ignorance wherever I have been sensible of it. You will do well, if you publish, as you propose, this letter, to add in notes, or as you please, such observations as may have occurred to your attentive mind; and if other philosophers will do the same, this part of science, though humble, yet of great utility, may in time be perfected. For many years past, I have rarely met with a case of a smoky chimney, which has not been solvable on these principles, and cured by these remedies, where people have been willing to apply them; which is indeed not always the case; for many have prejudices in favor of the nostrums of pretending chimney-doctors and fumists, and some have conceits and fancies of their own, which they rather choose to try, than to lengthen a funnel, alter the size of an opening, or admit air into a room, however necessary; for some are as much afraid of fresh air as persons in the hydrophobia are of fresh water. I myself had formerly this prejudice, this *aerophobia*, as I now account it, and dreading the supposed dangerous effects

[1] See Notes at the end of this paper, No. III.

of cool air, I considered it as an enemy, and closed with extreme care every crevice in the rooms I inhabited. Experience has convinced me of my error. I now look upon fresh air as a friend: I even sleep with an open window. I am persuaded that no common air from without, is so unwholesome as the air within a close room that has been often breathed and not changed. Moist air too, which formerly I thought pernicious, gives me now no apprehensions: for considering that no dampness of air applied to the outside of my skin can be equal to what is applied to and touches it within, my whole body being full of moisture, and finding that I can lie two hours in a bath twice a-week, covered with water, which certainly is much damper than any air can be, and this for years together, without catching cold, or being in any other manner disordered by it, I no longer dread mere moisture, either in air or in sheets or shirts: and I find it of importance to the happiness of life, the being freed from vain terrors, especially of objects that we are every day exposed inevitably to meet with. You physicians have of late happily discovered, after a contrary opinion had prevailed some ages, that fresh and cool air does good to persons in the small pox and other fevers. It is to be hoped, that in another century or two we may all find out, that it is not bad even for people in health. And as to moist air, here I am at this present writing in a ship with above forty persons, who have had no other but moist air to breathe for six weeks past; every thing we touch is damp, and nothing dries, yet we are all as healthy as we should be on the mountains of Switzerland, whose inhabitants are not more so than those of Bermuda or St. Helena, islands on whose rocks the waves are dashed into millions of particles, which fill the air with damp, but produce no diseases, the moisture being pure, unmixed with the poisonous vapors arising from putrid marshes and stagnant pools, in which many insects die and corrupt the water. These places only, in my opinion, (which however I submit to yours) afford unwholesome air; and that it is not the mere water contained in damp air, but the volatile particles of corrupted animal matter mixed with that water, which renders such air pernicious to those who breathe it. And I imagine it a cause of the same kind that renders the air in close rooms, where the perspirable matter is breathed over and over again by a number of assembled people, so hurtful to health. After being in such a situation, many find themselves affected by that *febricula*, which the English alone call *a cold*, and, perhaps from the name, imagine that they caught the malady by *going out* of the room, when it was in fact by being in it.

You begin to think that I wander from my subject, and go out of my depth. So I return again to my chimnies.

We have of late many lecturers in experimental philosophy. I have wished that some of them would study this branch of that science, and give experiments in it as a part of their lectures. The addition to their present apparatus need not be very expensive. A number of little representations of rooms, composed each of five panes of sash glass, framed in wood at the corners, with proportionable doors, and moveable glass chimnies, with openings of different sizes, and different lengths of funnel, and some of the rooms so contrived as to communicate on occasion with others, so as to form different combinations, and exemplify different cases; with quantities of green wax taper cut into pieces of an inch and half, sixteen of which stuck together in a square, and lit, would make a strong fire for a little glass chimney, and blown out, would continue to burn and give smoke as long as desired. With such an apparatus all the operations of smoke and rarefied air in rooms and chimnies might be seen through their transparent sides; and the effect of winds on chimnies, commanded or otherwise, might be shown by letting the entering air blow upon them through an opened window of the lecturer's chamber, where it would be constant while he kept a good fire in his chimney. By the help of such lectures our fumists would become better instructed. At present they have generally but one remedy, which perhaps they have known effectual in some one case of smoky chimnies, and they apply that indiscriminately to all the other causes, without success,—but not without expense to their employers.

With all the science, however, that a man shall suppose himself possessed of in this article, he may sometimes meet with cases that may puzzle him. I once lodged in a house at London, which, in a little room, had a single chimney and funnel. The opening was very small, yet it did not keep in the smoke, and all attempts to have a fire in this room were fruitless. I could not imagine the reason, till at length observing that the chamber over it, which had no fire-place in it, was always filled with smoke when a fire was kindled below, and that the smoke came through the cracks and crevices of the wainscot; I had the wainscot taken down, and discovered that the funnel which went up behind it, had a crack many feet in length, and wide enough to admit my arm, a breach very dangerous with regard to fire, and occasioned probably by an apparent irregular settling of one side of the house. The air entering this breach freely, destroyed the drawing force of the funnel. The remedy would have been, filling up the

breach or rather rebuilding the funnel; but the landlord rather chose to stop up the chimney.

Another puzzling case I met with at a friend's country-house near London. His best room had a chimney in which, he told me, he never could have a fire, for all the smoke came out into the room. I flattered myself I could easily find the cause, and prescribe the cure. I had a fire made there, and found it as he said. I opened the door and perceived it was not want of air. I made a temporary contraction of the opening of the chimney, and found that it was not its being too large that caused the smoke to issue. I went out and looked up at the top of the chimney: its funnel was joined in the same stack with others, some of them shorter, that drew very well, and I saw nothing to prevent its doing the same. In fine, after every other examination I could think of, I was obliged to own the insufficiency of my skill. But my friend, who made no pretensions to such kind of knowledge, afterwards discovered the cause himself. He got to the top of the funnel by a ladder, and looking down, found it filled with twigs and straw cemented by earth, and lined with feathers. It seems the house, after being built, had stood empty some years before he occupied it; and he concluded that some large birds had taken advantage of its retired situation to make their nest there. The rubbish, considerable in quantity, being removed, and the funnel cleared, the chimney drew well and gave satisfaction.

In general, smoke is a very tractable thing, easily governed and directed when one knows the principles, and is well informed of the circumstances. You know I made it *descend* in my Pennsylvania stove. I formerly had a more simple construction, in which the same effect was produced, but visible to the eye. (Plate IV. figure 7.) It was composed of two plates, A B and C D, placed as in the figure. The lower plate A B rested with its edge in the angle made by the hearth with the back of the chimney. The upper plate was fixed to the breast, and lapped over the lower about six inches wide and the length of the plates (near two feet) between them. Every other passage of air into the funnel was well stopped. When therefore a fire was made at E, for the first time with charcoal, till the air in the funnel was a little heated through the plates, and then wood laid on, the smoke would rise to A, turn over the edge of that plate, descend to D, then turn under the edge of the upper plate, and go up the chimney. It was pretty to see, but of no great use. Placing therefore the under plate in a higher situation, I removed the upper plate C D, and placed

it perpendicularly, (Plate IV. Figure 8,) so that the upper edge of the lower plate A B came within about three inches of it, and might be pushed farther from it, or suffered to come nearer to it, by a moveable wedge between them. The flame then ascending from the fire at E, was carried to strike the upper plate, made it very hot, and its heat rose and spread with the rarefied air into the room.

I believe you have seen in use with me, the contrivance of a sliding plate over the fire, seemingly placed to oppose the rising of the smoke, leaving but a small passage for it, between the edge of the plate and the back of the chimney. It is particularly described, and its uses explained, in my former printed letter, and I mention it here only as another instance of the tractability of smoke.[1]

What is called the Staffordshire chimney (see Plate V. page 536), affords an example of the same kind. The opening of the chimney is bricked up, even with the fore-edge of its jambs, leaving open only a passage over the grate of the same width, and perhaps eight inches high. The grate consists of semicircular bars, their upper bar of the greatest diameter, the others under it smaller and smaller, so that it has the appearance of half a round basket. It is, with the coals it contains, wholly without the wall that shuts up the chimney; yet the smoke bends and enters the passage above it, the draught being strong, because no air can enter that is not obliged to pass near or through the fire, so that all that the funnel is filled with is much heated, and of course much rarefied.

Much more of the prosperity of a winter country depends on the plenty and cheapness of fuel, than is generally imagined. In travelling I have observed, that in those parts where the inhabitants can have neither wood, nor coal, nor turf, but at excessive prices, the working people live in miserable hovels, are ragged, and have nothing comfortable about them. But when fuel is cheap (or where they have the art of managing it to advantage) they are well furnished with necessaries, and have decent habitations. The obvious reason is, that the working hours of such people are the profitable hours, and they who cannot afford sufficient fuel have fewer such hours in the twenty-four, than those who have it cheap and plenty: for much of the domestic work of poor women, such as spinning, sewing, knitting, and of the men in those manufactures that require little bodily exercise, cannot well be performed where the fingers are numbed with cold; those people therefore, in cold weather, are induced to go to

[1] See Notes at the end of this paper, No. II.

bed sooner, and lie longer in a morning than they would do if they could have good fires or warm stoves to sit by; and their hours of work are not sufficient to produce the means of comfortable subsistence. Those public works, therefore, such as roads, canals, &c. by which fuel may be brought cheap into such countries from distant places, are of great utility; and those who promote them may be reckoned among the benefactors of mankind.

I have great pleasure in having thus complied with your request, and in the reflection, that the friendship you honor me with, and in which I have ever been so happy, has continued so many years without the smallest interruption. Our distance from each other is now augmented, and nature must soon put an end to the possibility of my continuing our correspondence: but if consciousness and memory remain in a future state, my esteem and respect for you, my dear friend, will be everlasting. B. FRANKLIN.

Notes for the preceding Letter upon Chimnies.

No. I.

The latest work on architecture that I have seen, is that intitled *Nut-shells*, which appears to be written by a very ingenious man, and contains a table of the proportions of the openings of chimnies; but they relate solely to the proportions he gives his rooms, without the smallest regard to the funnels. And he remarks, respecting those proportions, that they are similar to the harmonic divisions of a monochord.[1] He does not indeed lay much stress on this; but it shows that we like the appearance of principles; and where we have not true ones, we have some satisfaction in producing such as are imaginary.

No. II.

The description of the sliding plates here promised, and which hath been since brought into use under various names, with some immaterial changes, is contained in a former letter to James Bowdoin, Esq. as follows:

---

[1] "It may be just remarked here, that upon comparing these proportions with those arising from the common divisions of the monochord, it happens that the first answers to unisons; and although the second is a discord, the third answers to the third minor, the fourth to the third major, the fifth to the fourth, the sixth to the fifth, and the seventh to the octave." NUT-SHELLS, page 85.

To James Bowdoin, Boston.

Dear Sir, *London, Dec.* 2, 1758.

I have executed here an easy simple contrivance, that I have long since had in speculation, for keeping rooms warmer in cold weather than they generally are, and with less fire. It is this: the opening of the chimney is contracted, by brick-work faced with marble slabs, to about two feet between the jambs, and the breast brought down to within about three feet of the hearth. An iron frame is placed just under the breast, and extending quite to the back of the chimney, so that a plate of the same metal may slide horizontally backwards and forwards in the grooves on each side of the frame. This plate is just so large as to fill the whole space, and shut the chimney entirely when thrust quite in, which is convenient when there is no fire. Drawing it out, so as to leave a space between its further edge and the back, of about two inches; this space is sufficient for the smoke to pass; and so large a part of the funnel being stopt by the rest of the plate, the passage of warm air out of the room, up the chimney, is obstructed and retarded, and by that means much cold air is prevented from coming in through crevices, to supply its place. This effect is made manifest three ways. First, when the fire burns briskly in cold weather, the howling or whistling noise made by the wind, as it enters the room through the crevices, when the chimney is open as usual, ceases as soon as the plate is slid in to its proper distance. Secondly, opening the door of the room about half an inch, and holding your hand against the opening, near the top of the door, you feel the cold air coming in against your hand, but weakly, if the plate be in. Let another person suddenly draw it out, so as to let the air of the room go up the chimney with its usual freedom, where chimnies are open, and you immediately feel the cold air rushing in strongly. Thirdly, if something be set against the door, just sufficient, when the plate is in, to keep the door nearly shut, by resisting the pressure of the air that would force it open; then, when the plate is drawn out, the door will be forced open by the increased pressure of the outward cold air endeavoring to get in to supply the place of the warm air, that now passes out of the room to go up the chimney. In our common open chimnies, half the fuel is wasted, and its effect lost; the air it has warmed being immediately drawn off. Several of my acquaintance, having seen this simple machine in my room, have imitated it at their own houses, and it

seems likely to become pretty common. I describe it thus particularly to you, because I think it would be useful in Boston, where firing is often dear.

Mentioning chimnies puts me in mind of a property I formerly had occasion to observe in them, which I have not found taken notice of by others; it is, that in the summer time, when no fire is made in the chimnies, there is, nevertheless, a regular draught of air through them, continually passing upwards, from about five or six o'clock in the afternoon, till eight or nine o'clock the next morning, when the current begins to slacken and hesitate a little, for about half an hour, and then sets as strongly down again, which it continues to do till towards five in the afternoon, then slackens and hesitates as before, going sometimes a little up, then a little down, till, in about half an hour, it gets into a steady upward current for the night, which continues till eight or nine the next day; the hours varying a little as the days lengthen and shorten, and sometimes varying from sudden changes in the weather; as if, after being long warm, it should begin to grow cool about noon, while the air was coming down the chimney, the current will then change earlier than the usual hour, &c.

This property in chimnies I imagine we might turn to some account, and render improper, for the future, the old saying, *as useless as a chimney in summer.* If the opening of the chimney, from the breast down to the hearth, be closed by a slight moveable frame or two, in the manner of doors, covered with canvass, that will let the air through, but keep out the flies; and another little frame set within upon the hearth, with hooks on which to hang joints of meat, fowls, &c. wrapt well in wet linen cloths, three or four fold, I am confident, that if the linen is kept wet, by sprinkling it once a-day, the meat would be so cooled by the evaporation, carried on continually by means of the passing air, that it would keep a week or more in the hottest weather. Butter and milk might likewise be kept cool, in vessels or bottles covered with wet cloths. A shallow tray, or keeler, should be under the frame to receive any water that might drip from the wetted cloths. I think, too, that this property of chimnies might, by means of smoke-jack vanes, be applied to some mechanical purposes, where a small but pretty constant power only is wanted.

If you would have my opinion of the cause of this changing current of air in chimnies, it is, in short, as follows. In summer time there is generally a great difference in the warmth of the air at mid-day and midnight, and, of course, a difference of specific gravity in the air, as the more it is warmed the more it is rarefied. The funnel of a chimney, being for the most part surrounded by the

house, is protected, in a great measure, from the direct action of the sun's rays, and also from the coldness of the night air. It thence preserves a middle temperature between the heat of the day and the coldness of the night. This middle temperature it communicates to the air contained in it. If the state of the outward air be cooler than that in the funnel of the chimney, it will, by being heavier, force it to rise, and go out at the top. What supplies its place from below being warmed, in its turn, by the warmer funnel, is likewise forced up by the colder and weightier air below, and so the current is continued till the next day, when the sun gradually changes the state of the outward air, makes it first as warm as the funnel of the chimney can make it (when the current begins to hesitate) and afterwards warmer. The funnel, being cooler than the air that comes into it, cools that air, makes it heavier than the outward air, of course it descends; and what succeeds it from above being cooled in its turn, the descending current continues till towards evening, when it again hesitates and changes its course, from the change of warmth in the outward air, and the nearly remaining same middle temperature in the funnel.

Upon this principle, if a house were built behind Beacon-hill, an adit carried from one of the doors into the hill horizontally, till it meet with a perpendicular shaft sunk from its top, it seems probable to me, that those who lived in the house would constantly, in the heat even of the calmest day, have as much cool air passing through the house as they should choose; and the same, though reversed in its current, during the stillest night.

I think, too, this property might be made of use to miners; as, where several shafts or pits are sunk perpendicularly into the earth, communicating at bottom by horizontal passages, which is a common case, if a chimney of thirty or forty feet high were built over one of the shafts, or so near the shaft, that the chimney might communicate with the top of the shaft, all air being excluded but what should pass up or down by the shaft, a constant change of air would by this means be produced in the passages below, tending to secure the workmen from those damps, which so frequently incommode them. For the fresh air would be almost always going down the open shaft, to go up the chimney, or down the chimney, to go up the shaft. Let me add one observation more, which is, that if that part of the funnel of a chimney which appears above the roof of a house be pretty long, and have three of its sides exposed to the heat of the sun successively, viz. when he is in the east, in the south, and in the west, while the north side is sheltered by the building from the cool northerly

winds; such a chimney will often be so heated by the sun, as to continue the draught strongly upwards, through the whole twenty-four hours, and often for many days together. If the outside of such a chimney be painted black, the effect will be still greater, and the current stronger.

No. III.

It is said the northern Chinese have a method of warming their ground floors, which is ingenious. Those floors are made of tiles, a foot square and two inches thick, their corners being supported by bricks set on end, that are a foot long and four inches square; the tiles, too, join into each other, by ridges and hollows along their sides. This forms a hollow under the whole floor, which on one side of the house has an opening into the air, where a fire is made, and it has a funnel rising from the other side to carry off the smoke. The fuel is a sulphurous pitcoal, the smell of which in the room is thus avoided, while the floor, and of course the room, is well warmed. But as the underside of the floor must grow foul with soot, and a thick coat of soot prevents much of the direct application of the hot hair to the tiles, I conceive that burning the smoke, by obliging it to descend through red coals, would in this construction be very advantageous, as more heat would be given by the flame than by the smoke, and the floor being thereby kept free from soot, would be more heated with less fire. For this purpose I would propose erecting the funnel close to the grate, so as to have only an iron plate between the fire and the funnel, through which plate, the air in the funnel being heated, it will be sure to draw well, and force the smoke to descend, as in the figure (Plate IV. Figure 9.) where A is the funnel or chimney, B the grate on which the fire is placed, C one of the apertures through which the descending smoke is drawn into the channel D of figure 10, along which channel it is conveyed by a circuitous route as designated by the arrows, until it arrives at the small aperture E, figure 10, through which it enters the funnel F. G in both figures is the iron plate against which the fire is made, which being heated thereby, will rarefy the air in that part of the funnel, and cause the smoke to ascend rapidly. The flame thus dividing from the grate to the right and left, and turning in passages, disposed, as in figure 13, so as that every part of the floor may be visited by it before it enters the funnel F, by the two passages E E, very little of the heat will be lost, and a winter room thus rendered very comfortable.

No. IV.

Page 435. *Few can imagine, &c.* It is said the Icelanders have very little fuel, chiefly drift wood that comes upon their coast. To receive more advantage from its heat, they make their doors low, and have a stage round the room above the door, like a gallery, wherein the women can sit and work, the men read or write, &c. The roof being tight, the warm air is confined by it, and kept from rising higher and escaping; and the cold air, which enters the house when the door is opened, cannot rise above the level of the top of the door, because it is heavier than the warm air above the door, and so those in the gallery are not incommoded by it. Some of our too lofty rooms might have a stage so constructed as to make a temporary gallery above, for the winter, to be taken away in summer. Sedentary people would find much comfort there in cold weather.

No. V.

Page 451. *Where they have the art of managing it,* &c. In some houses of the lower people among the northern nations of Europe, and among the poorer sort of Germans in Pennsylvania, I have observed this construction, which appears very advantageous. (Plate IV. Figure 11.) A. is the kitchen with its chimney; B an iron stove in the stove-room. In a corner of the chimney is a hole through the back into the stove, to put in fuel, and another hole above it to let the smoke of the stove come back into the chimney. As soon as the cooking is over, the brands in the kitchen chimney are put through the hole to supply the stove, so that there is seldom more than one fire burning at a time. In the floor over the stove-room, is a small trap-door, to let the warm air rise occasionally into the chamber. Thus the whole house is warmed at little expense of wood, and the stove-room kept constantly warm; so that in the coldest winter nights, they can work late, and find the room still comfortable when they rise to work early. An English farmer in America, who makes great fires in large open chimnies, needs the constant employment of one man to cut and haul wood for supplying them; and the draught of cold air to them is so strong, that the heels of his family are frozen while they are scorching their faces, and the room is never warm, so that little sedentary work can be done by them in winter. The difference in this article alone of economy shall, in a course of years, enable the German to buy out the Englishman, and take possession of his plantation.

Miscellaneous Observations.

Chimnies, whose funnels go up in the north wall of a house and are exposed to the north winds, are not so apt to draw well as those in a south wall; because, when rendered cold by those winds, they draw downwards.

Chimnies, enclosed in the body of a house, are better than those whose funnels are exposed in cold walls.

Chimnies in stacks are apt to draw better than separate funnels, because the funnels that have constant fires in them warm the others, in some degree, that have none.

One of the funnels, in a house I once occupied, had a particular funnel joined to the south side of the stack, so that three of its sides were exposed to the sun in the course of the day, viz. (Plate IV. Figure 12.) the east side E during the morning, the south side S in the middle part of the day, and the west side W during the afternoon, while its north side was sheltered by the stack from the cold winds. This funnel, which came from the ground-floor, and had a considerable height above the roof, was constantly in a strong drawing state day and night, winter and summer.

Blacking of funnels, exposed to the sun, would probably make them draw still stronger.

In Paris I saw a fire-place so ingeniously contrived as to serve conveniently two rooms, a bedchamber and a study. The funnel over the fire was round. The fire-place was of cast iron, (Plate IV. Figure 13.) having an upright back A, and two horizontal semicircular plates B C, the whole so ordered as to turn on the pivots D E. The plate B always stopped that part of the round funnel that was next to the room without fire, while the other half of the funnel over the fire was always open. By this means a servant in the morning could make a fire on the hearth C, then in the study, without disturbing the master by going into his chamber; and the master, when he rose, could with a touch of his foot turn the chimney on its pivots, and bring the fire into his chamber, keep it there as long as he wanted it, and turn it again when he went out, into his study. The room which had no fire in it was also warmed by the heat coming through the back plate, and spreading in the room, as it could not go up the chimney.

PLATE V.

STAFFORDSHIRE FIRE-PLACE. Referred to page 497.

Front View. *Side View.*

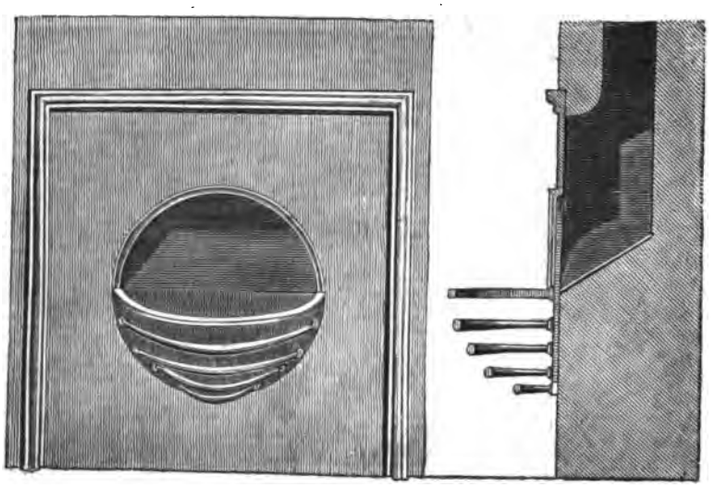
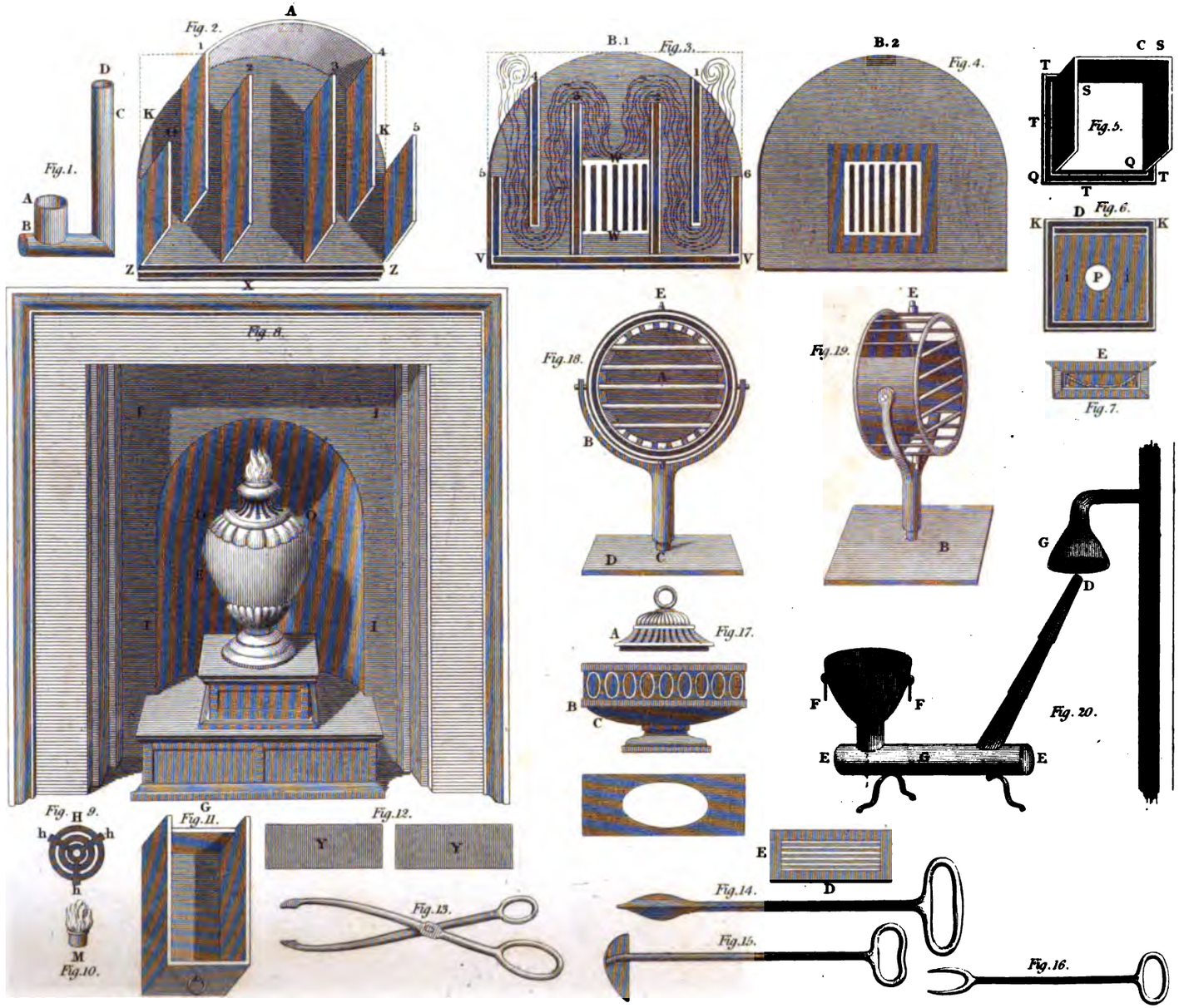


Plate VI. to face Page 305.

STOVE FOR BURNING PIT-COAL.



London Published by Henry Colburn, Conduit Street, May. 1818.

Sidy Hall sculp.

DESCRIPTION OF A NEW STOVE

FOR BURNING PITCOAL, AND CONSUMING ALL ITS SMOKE.

WRITTEN AT SEA 1785.

TOWARDS the end of the last century an ingenious French philosopher, whose name I am sorry I cannot recollect, exhibited an experiment to show, that very offensive things might be burnt in the middle of a chamber, such as woollen rags, feathers, &c. without creating the least smoke or smell. The machine in which it was made, if I remember right, was of this form, (see Plate VI, Figure 1.) made of plate iron. Some clear-burning charcoals were put into the opening of the short tube A, and supported there by the grate B. The air, as soon as the tubes grew warm, would ascend in the longer leg C and go out at D; consequently air must enter at A, descending to B. In this course it must be heated by the burning coals through which it passed, and rise more forcibly in the longer tube, in proportion to its degree of heat or rarefaction, and length of that tube. For such a machine is a kind of inverted siphon; and as the greater weight of water in the longer leg of a common siphon in descending is accompanied by an ascent of the same fluid in the shorter; so, in this inverted siphon, the greater quantity of levity of air in the longer leg, in rising is accompanied by the descent of air in the shorter. The things to be burned being laid on the hot coals at A, the smoke must descend through those coals, be converted into flame, which, after destroying the offensive smell, come out at the end of the longer tube as mere heated air.

Whoever would repeat this experiment with success, must take care that the part A B, of the short tube, be quite full of burning coals, so that no part of the smoke may descend and pass by them without going through them, and being converted into flame; and that the longer tube be so heated as that the current of ascending hot air is established in it before the things to be burnt are laid on the coals; otherwise there will be a disappointment.

It does not appear either in the Memoirs of the Academy of Sciences, or Philosophical Transactions of the English Royal Society, that any improvement was ever made of this ingenious experiment, by applying it to useful purposes. But there is a German book, entitled *Vulcanus Famulans*, by John George Leutmann, P. D. printed at Wirtemberg in 1723, which describes, among a great variety of other stoves for warming rooms, one, which seems to have been formed on the same principle, and probably from the hint thereby

given, though the French experiment is not mentioned. This book being scarce, I have translated the chapter describing the stove, viz.

"*Vulcanus Famulans, by John George Leutmann, P. D. Wirtemberg*, 1723.

"CHAP. VII.

"ON A STOVE, WHICH DRAWS DOWNWARDS.

"Here follows the description of a sort of stove, which can easily be removed and again replaced at pleasure. This drives the fire down under itself, and gives no smoke, but however a very unwholesome vapor.

"In the figure, A is an iron vessel like a funnel, (Plate VI, Figure 20.) in diameter at the top about twelve inches, at the bottom near the grate about five inches; its height twelve inches. This is set on the barrel C, which is ten inches diameter and two feet long, closed at each end E E. From one end rises a pipe or flue about four inches diameter, on which other pieces of pipe are set, which are gradually contracted to D, where the opening is but about two inches. Those pipes must together be at least four feet high. B is an iron grate. F F are iron handles guarded with wood, by which the stove is to be lifted and moved. It stands on three legs. Care must be taken to stop well all the joints, that no smoke may leak through.

"When this stove is to be used, it must first be carried into the kitchen and placed in the chimney near the fire. There burning wood must be laid and left upon its grate till the barrel C is warm, and the smoke no longer rises at A, but descends towards C. Then it is to be carried into the room which it is to warm. When once the barrel C is warm, fresh wood may be thrown into the vessel A as often as one pleases; the flame descends and without smoke, which is so consumed that only a vapor passes out at D.

"As this vapor is unwholesome, and affects the head, one may be freed from it, by fixing in the wall of the room an inverted funnel, such as people use to hang over lamps, through which their smoke goes out as through a chimney. This funnel carries out all the vapor cleverly, so that one finds no inconvenience from it, even though the opening D be placed a span below the mouth of the said funnel G. The neck of the funnel is better when made gradually bending, than if turned in a right angle.

"The cause of the draught downwards in the stove is the pressure of the outward air, which, falling into the vessel A in a column of twelve inches diameter, finds only a resisting passage at the grate B, of five inches, and one at D, of

two inches, which are much too weak to drive it back again; besides, A stands much higher than B, and so the pressure on it is greater and more forcible, and beats down the frame to that part where it finds the least resistance. Carrying the machine first to the kitchen fire for preparation, is on this account, that in the beginning the fire and smoke naturally ascend, till the air in the close barrel C is made thinner by the warmth. When that vessel is heated, the air in it is rarefied, and then all the smoke and fire descend under it.

" The wood should be thoroughly dry, and cut into pieces five or six inches long, to fit it for being thrown into the funnel A." Thus far the German book.

It appears to me, by Mr. Leutmann's explanation of the operation of this machine, that he did not understand the principles of it, whence I conclude he was not the inventor of it; and by the description of it, wherein the opening at A is made so large, and the pipe E D so short, I am persuaded he never made nor saw the experiment; for the first ought to be much smaller and the last much higher, or it hardly will succeed. The carrying it into the kitchen, too, every time the fire should happen to be out, must be so troublesome, that it is not likely ever to have been in practice, and probably has never been shown but as a philosophical experiment. The funnel for conveying the vapor out of the room would besides have been uncertain in its operation, as a wind blowing against its mouth would drive the vapor back.

The stove I am about to describe was also formed on the idea given by the French experiment, and completely carried into execution before I had any knowledge of the German invention; which I wonder should remain so many years in a country, where the men are so ingenious in the management of fire, without receiving long since the improvements I have given it.

Description of the Parts.

A, the bottom plate which lies flat upon the hearth, with its partitions, 1, 2, 3, 4, 5, 6, (Plate VI, Figure 2.) that are cast with it, and a groove Z Z, in which are to slide, the bottom edges of the small plates Y Y, figure 12; which plates meeting at X close the front.

B 1, figure 3, is the cover plate showing its under side, with the grooves 1, 2, 3, 4, 5, 6, to receive the top edges of the partitions that are fixed to the bottom plate. It shows also the grate W W, the bars of which are cast in the plate, and a groove V V, which comes right over the groove Z Z, figure 2, receiving the upper edges of the small sliding plates Y Y, figure 12.

B 2, figure 4, shows the upper side of the same plate, with a square impression or groove for receiving the bottom mouldings T T T T of the three-sided box C, figure 5, which is cast in one piece.

D, figure 6, its cover, showing its under side with grooves to receive the upper edges S S S of the sides of C, figure 5, also a groove R R, which when the cover is put on comes right over another Q Q in C, figure 5, between which it is to slide.

E, figure 7, the front plate of the box.

P, a hole three inches diameter through the cover D, figure 6, over which hole stands the vase F, figure 8, which has a corresponding hole two inches diameter through its bottom.

The top of the vase opens at O, O, O, figure 8, and turns back upon a hinge behind when coals are to be put in; the vase has a grate within at N N of cast iron H, figure 9, and a hole in the top, one and a half inches diameter, to admit air, and to receive the ornamental brass gilt flame M, figure 10, which stands in that hole, and, being itself hollow and open, suffers air to pass through it into the fire.

G, figure 11, is a drawer of plate iron, that slips in between in the partitions 2 and 3, figure 2, to receive the falling ashes. It is concealed when the small sliding plates Y Y, figure 12, are shut together.

I, I, I, I, figure 8, is a niche built of brick in the chimney and plastered. It closes the chimney over the vase, but leaves two funnels, one in each corner, communicating with the bottom box K K, figure 2.

Dimensions of the Parts.	FEET.	IN.
Front of the bottom box,	2	0
Height of its partitions,	0	4¼
Length of No. 1, 2, 3, and 4, each,	1	3
Length of No. 5 and 6, each,	0	8¼
Breadth of the passage between No. 2 and 3,	0	6
Breadth of the other passages each,	0	3½
Breadth of the grate,	0	6½
Length of Ditto,	0	8
Bottom moulding of box C, square,	1	0
Height of the sides of ditto,	0	4
Length of the back side,	0	10

	FEET.	IN.
Length of the right and left sides, each, -	0	9½
Length of the front plate E, where longest, -	0	11
The cover D, square, - - - - - -	0	12
Hole in ditto, diameter, - - - -	0	3
Sliding plates Y Y, their length, each, - -	1	0
..... their breadth, each, - -	0	4½
Drawer G. its length, - - - - -	0	1
.....breadth, - - - - -	0	5¾
.....depth, - - - - -	0	4
.....depth of its further end only, -	0	1
Grate H in the vase, its diameter to the extremity of its knobs, - - - - - -	0	5
Thickness of the bars at top, - - - -	0	0½
..... at bottom, less, - -	0	0
Depth of the bars at the top, - - -	0	0¾
Height of the vase, - - - - -	1	6
Diameter of the opening O, O, in the clear -	0	8
Diameter of the air-hole at top, - - -	0	1½
.....of the flame-hole at bottom, - -	0	2

To fix this Machine.

Spread mortar on the hearth to bed the bottom plate A, then lay that plate level, equally distant from each jamb, and projecting out as far as you think proper. Then putting some Windsor loam in the grooves of the cover B, lay that on: trying the sliding plates Y Y, to see if they move freely in the grooves Z Z, V V, designed for them.

Then begin to build the niche, observing to leave the square corners of the chimney unfilled; for they are to be funnels. And observe also to leave a free open communication between the passages at K K, and the bottom of those funnels, and mind to close the chimney above the top of the niche, that no air may pass up that way. The concave back of the niche will rest on the circular iron partition 1 A 4, figure 2: then with a little loam, put on the box C over the grate, the open side of the box in front.

Then, with loam in three of its grooves, the grooves R R being left clean,

and brought directly over the groove Q Q in the box, put on the cover D, trying the front plate E, to see if it slides freely in those grooves.

Lastly, set on the vase, which has small holes in the moulding of its bottom to receive two iron pins that rise out of the plate D at I I, for the better keeping it steady.

Then putting in the grate H, which rests on its three knobs h h h against the inside of the vase, and slipping the drawer into its place; the machine is fit for use.

To use it.

Let the first fire be made after eight in the evening or before eight in the morning, for at those times and between those hours all night, there is usually a draught up a chimney, though it has long been without fire; but between those hours in the day there is often, in a cold chimney, a draught downwards, when, if you attempt to kindle a fire, the smoke will come into the room.

But to be certain of your proper time, hold a flame over the air-hole at the top. If the flame is drawn strongly down for a continuance, without whiffling, you may begin to kindle a fire.

First put in a few charcoals on the grate H.

Lay some small sticks on the charcoals.

Lay some pieces of paper on the sticks.

Kindle the paper with a candle.

Then shut down the top, and the air will pass down through the air-hole; blow the flame of the paper down through the sticks, kindle them, and their flame passing lower kindles the charcoal.

When the charcoal is well kindled, lay on it the seacoals, observing not to choak the fire by putting on too much at first.

The flame descending through the hole in the bottom of the vase, and that in plate D into the box C, passes down farther through the grate W W in plate B 1, then passes horizontally towards the back of the chimney; there dividing, and turning to the right and left, one part of it passes round the far end of the partition 2, then coming forward it turns round the near end of partition 1, then moving backward it arrives at the opening into the bottom of one of the upright corner funnels behind the niche, through which it ascends into the chimney, thus heating that half of the box, and that side of the niche. The other part of the divided flame passes round the far end of partition 3, round the near

end of partition 4, and so into and up the other corner funnel, thus heating the other half of the box, and the other side of the niche. The vase itself, and the box C, will also be very hot, and the air surrounding them being heated, and rising, as it cannot get into the chimney, it spreads into the room, colder air succeeding is warmed in its turn, rises and spreads, till by the continual circulation the whole is warmed.

If you should have occasion to make your first fire at hours not so convenient as those above mentioned, and when the chimney does not draw, do not begin it in the vase, but in one or more of the passages of the lower plate, first covering the mouth of the vase. After the chimney has drawn a while with the fire thus low, and begins to be a little warm, you may close those passages and kindle another fire in the box C, leaving its sliding shutter a little open; and when you find after some time that the chimney being warmed draws forcibly, you may shut that passage, open your vase, and kindle your fire there, as above directed. The chimney well warmed by the first day's fire will continue to draw constantly all winter, if fires are made daily.

You will, in the management of your fire, have need of the following implements:

A pair of small light tongs, twelve or fifteen inches long, plate, figure 13.

A light poker about the same length with a flat broad point, figure 14.

A rake to draw ashes out of the passages of the lower plate, where the lighter kind escaping the ash-box will gather by degrees, and perhaps once in a week or ten days require being removed, figure 15.

And a fork with its prongs wide enough to slip on the neck of the vase cover, in order to raise and open it when hot, to put in fresh coals, figure 16.

In the management of this stove there are certain precautions to be observed, at first with attention, till they become habitual. To avoid the inconvenience of smoke, see that the grate H be clear before you begin to light a fresh fire. If you find it clogged with cinders and ashes, turn it up with your tongs, and let them fall upon the grate below; the ashes will go through it, and the cinders may be raked off and returned into the vase when you would burn them. Then see that all the sliding plates are in their places and close shut, that no air may enter the stove but through the round opening at the top of the vase. And to avoid the inconvenience of dust from the ashes, let the ash-drawer be taken out of the room to be emptied: and when you rake the passages, do it when the

draught of the air is strong inwards, and put the ashes carefully into the ash-box, that remaining in its place.

If, being about to go abroad, you would prevent your fire burning in your absence, you may do it by taking the brass flame from the top of the vase, and covering the passage with a round tin plate, which will prevent the entry of more air than barely sufficient to keep a few of the coals alive. When you return, though some hours absent, by taking off the tin plate and admitting the air, your fire will soon be recovered.

The effect of this machine, well managed, is to burn not only the coals, but all the smoke of the coals, so that while the fire is burning, if you go out and observe the top of your chimney, you will see no smoke issuing, nor any thing but clear warm air, which as usual makes the bodies seen through it appear waving.

But let none imagine from this, that it may be a cure for bad or smoky chimnies, much less that, as it burns the smoke, it may be used in a room that has no chimney. It is by the help of a good chimney, the higher the better, that it produces its effect; and though a flue of plate iron sufficiently high might be raised in a very lofty room, the management to prevent all disagreeable vapor would be too nice for common practice, and small errors would have unpleasing consequences.

It is certain that clean iron yields no offensive smell when heated. Whatever of that kind you perceive where there are iron stoves, proceeds therefore from some foulness burning or fuming on their surface. They should therefore never be spit upon, or greased, nor should any dust be suffered to lie upon them. But as the greatest care will not always prevent these things, it is well once a week to wash the stove with soap lees and a brush, rinsing it with clean water.

The Advantages of this Stove.

1. The chimney does not grow foul, nor ever need sweeping; for as no smoke enters it, no soot can form in it.

2. The air heated over common fires instantly quits the room and goes up the chimney with the smoke; but in the stove, it is obliged to descend in flame and pass through the long winding horizontal passages, communicating its heat to a body of iron plate, which having thus time to receive the heat, communicates the same to the air of the room, and thereby warms it to a greater degree.

3. The whole of the fuel is consumed by being turned into flame, and you have the benefit of its heat; whereas in common chimnies a great part goes away in smoke, which you see as it rises, but it affords you no rays of warmth. One may obtain some notion of the quantity of fuel thus wasted in smoke, by reflecting on the quantity of soot that a few weeks' firing will lodge against the sides of the chimney, and yet this is formed only of those particles of the column of smoke that happen to touch the sides in its ascent. How much more must have passed off in the air! And we know that this soot is still fuel: for it will burn and flame as such, and when hard caked together is indeed very like and almost as solid as the coal it proceeds from. The destruction of your fuel goes on nearly in the same quantity whether in smoke or in flame: but there is no comparison in the difference of heat given. Observe when fresh coals are first put on your fire, what a body of smoke arises. This smoke is for a long time too cold to take flame. If you then plunge a burning candle into it, the candle, instead of inflaming the smoke, will instantly be itself extinguished. Smoke must have a certain degree of heat to be inflammable. As soon as it has acquired that degree, the approach of a candle will inflame the whole body, and you will be very sensible of the difference of the heat it gives. A still easier experiment may be made with the candle itself. Hold your hand near the side of its flame, and observe the heat it gives; then blow it out, the hand remaining in the same place, and observe what heat may be given by the smoke that rises from the still burning snuff. You will find it very little. And yet that smoke has in it the substance of so much flame, and will instantly produce it, if you hold another candle above it so as to kindle it. Now the smoke from the fresh coals laid on this stove, instead of ascending and leaving the fire while too cold to burn, being obliged to descend through the burning coals, receives among them that degree of heat which converts it into flame, and the heat of that flame is communicated to the air of the room, as above explained.

4. The flame from the fresh coals laid on in this stove, descending through the coals already ignited, preserves them long from consuming, and continues them in the state of red coals as long as the flame continues that surrounds them, by which means the fires made in this stove are of much longer duration than in any other, and fewer coals are therefore necessary for a day. This is a very material advantage indeed. That flame should be a kind of *pickle*, to preserve burning coals from consuming, may seem a paradox to many, and very unlikely to be true, as it appeared to me the first time I observed the fact.

I must therefore relate the circumstances, and shall mention an easy experiment, by which my reader may be in possession of every thing necessary to the understanding of it. In the first trial I made of this kind of stove, which was constructed of thin plate iron, I had instead of the vase a kind of inverted pyramid like a mill-hopper; and fearing at first that the small grate contained in it might be clogged by cinders, and the passage of the flame sometimes obstructed, I ordered a little door near the grate, by means of which I might on occasion clear it: though after the stove was made, and before I tried it, I began to think this precaution superfluous, from an imagination, that the flame being contracted in the narrow part where the grate was placed, would be more powerful in consuming what it should there meet with, and that any cinders between or near the bars would be presently destroyed and the passage opened. After the stove was fixed and in action, I had a pleasure now and then in opening that door a little, to see through the crevice how the flame descended among the red coals; and observing once a single coal lodged on the bars in the middle of the focus, a fancy took me to observe with my watch in how short a time it would be consumed. I looked at it long without perceiving it to be at all diminished, which surprised me greatly. At length it occurred to me, that I and many others had seen the same thing thousands of times, in the conservation of the red coal formed in the snuff of a burning candle, which while enveloped in flame, and thereby prevented from the contact of passing air, is long continued, and augments instead of diminishing, so that we are often obliged to remove it by the snuffers, or blend it out of the flame into the air, where it consumes presently to ashes. I then supposed, that to consume a body by fire, passing air was necessary to receive and carry off the separated particles of the body: and that the air passing in the flame of my stove, and in the flame of a candle, being already saturated with such particles, could not receive more, and therefore left the coal undiminished as long as the outward air was prevented from coming to it by the surrounding flame, which kept it in a situation somewhat like that of charcoal in a well-luted crucible, which, though long kept in a strong fire, comes out unconsumed.

An easy experiment will satisfy any one of this conserving power of flame enveloping red coal. Take a small stick of deal or other wood the size of a goose-quill, and hold it horizontally and steadily in the flame of the candle above the wick, without touching it, but in the body of the flame. The wood will first be inflamed, and burn beyond the edge of the flame of the candle,

perhaps a quarter of an inch. When the flame of the wood goes out, it will leave a red coal at the end of the stick, part of which will be in the flame of the candle, and part out in the air. In a minute or two you will perceive the coal in the air diminish gradually, so as to form a neck; while the part in the flame continues of its first size, and at the neck being quite consumed, it drops off; and by rolling it between your fingers when extinguished, you will find it still a solid coal.

However, as one cannot be always putting on fresh fuel in this stove to furnish a continual flame as is done in a candle, the air in the intervals of time gets at the red coals and consumes them. Yet the conservation while it lasted, so much delayed the consumption of the coals, that two fires, one made in the morning, and the other in the afternoon, each made by only a hatful of coals, were sufficient to keep my writing-room, about sixteen feet square and ten high, warm a whole day. The fire kindled at seven in the morning would burn till noon; and all the iron of the machine with the walls of the niche being thereby heated, the room kept warm till evening, when another smaller fire kindled, kept it warm till midnight.

Instead of the sliding plate E, which shuts the front of the box C, I sometimes used another which had a pane of glass, or, which is better, of Muscovy talc, that the flame might be seen descending from the bottom of the vase and passing in a column through the box C, into the cavities of the bottom plate, like water falling from a funnel, admirable to such as are not acquainted with the nature of the machine, and in itself a pleasing spectacle.

Every utensil, however properly contrived to serve its purpose, requires some practice before it can be used adroitly. Put into the hands of a man for the first time a gimblet or a hammer (very simple instruments), and tell him the use of them, he shall neither bore a hole nor drive a nail with the dexterity and success of another who has been accustomed to handle them. The beginner therefore in the use of this machine, will do well not to be discouraged with little accidents that may arise at first from his want of experience. Being somewhat complex, it requires, as already said, a variety of attentions; habit will render them unnecessary. And the studious man who is much in his chamber, and has a pleasure in managing his own fire, will soon find this a machine most comfortable and delightful. To others who leave their fires to the care of ignorant servants, I do not recommend it. They will with difficulty acquire the knowledge necessary, and will make frequent blunders that will fill

your room with smoke. It is therefore by no means fit for common use in families. It may be advisable to begin with the flaming kind of stone coal, which is large, and, not caking together, is not so apt to clog the grate. After some experience, any kind of coal may be used, and with this advantage, that no smell, even from the most sulphurous kind, can come into your room, the current of air being constantly into the vase, where too that smell is all consumed.

The vase form was chosen as being elegant in itself, and very proper for burning of coals: where wood is the usual fuel, and must be burned in pieces of some length, a long square chest may be substituted, in which (Plate VI. figure 17.) A is the cover opening by a hinge behind, B the grate, C the hearth-box with its divisions as in the other, D the plan of the chest, E the long narrow grate. This I have not tried, but the vase machine was completed in 1771, and used by me in London three winters, and one afterwards in America, much to my satisfaction; and I have not yet thought of any improvement it may be capable of, though such may occur to others. For common use, while in France, I have contrived another grate for coals, which has in part the same property of burning the smoke and preserving the red coals longer by the flame, though not so completely as in the vase, yet sufficiently to be very useful, which I shall now describe as follows.

A (Plate VI. figure 18.) is a round grate, one foot (French) in diameter, and eight inches deep between the bars and the back; the sides and back of plate iron; the sides having holes of half an inch diameter, distant three or four inches from each other, to let in air for enlivening the fire. The back without holes. The sides do not meet at top nor at bottom by eight inches: that square is filled by grates of small bars crossing front to back to let in air below, and let out the smoke or flame above. The three middle bars of the front grate are fixed; the upper and lower may be taken out and put in at pleasure, when hot, with a pair of pincers. This round grate turns upon an axis, supported by the crotchet B, the stem of which is an inverted conical tube five inches deep, which comes on as many inches upon a pin that fits it, and which is fixed upright in a cast iron plate D, that lies upon the hearth; in the middle of the top and bottom grates are fixed small upright pieces E, E, about an inch high, which, as the whole is turned on its axis, stop it when the grate is perpendicular. Figure 19 is another view of the same machine.

In making the first fire in a morning with this grate, there is nothing parti-

cular to be observed. It is made as in other grates, the coals being put in above, after taking out the upper bar, and replacing it when they are in. The round figure of the fire when thoroughly kindled is agreeable; it represents the great giver of warmth to our system. As it burns down and leaves a vacancy above, which you would fill with fresh coals, the upper bar is to be taken out, and afterwards replaced. The fresh coals, while the grate continues in the same position, will throw up as usual a body of thick smoke. But every one accustomed to coal fires in common grates must have observed, that pieces of fresh coal stuck in below among the red coals have their smoke so heated as that it becomes flame as fast as it is produced, which flame rises among the coals and enlivens the appearance of the fire. Here then is the use of this swivel grate. By a push with your tongs or poker, you turn it on its pin till it faces the back of the chimney, then turn it over on its axis gently till it again faces the room, whereby all the fresh coals will be found under the live coals, and the greater part of the smoke arising from the fresh coals will in its passage through the live ones be heated so as to be converted into flame: whence you have much more heat from them, and your red coals are longer preserved from consuming. I conceive this construction, though not so complete a consumer of all the smoke as the vase, yet to be fitter for common use, and very advantageous. It gives too a full sight of the fire, always a pleasing object, which we have not in the other. It may with a touch be turned more or less from any one of the company that desires to have less of its heat, or presented full to one just come out of the cold. And supported in a horizontal position, a tea-kettle may be boiled on it.

The author's description of his Pennsylvania fire-place, first published in 1744, having fallen into the hands of workmen in Europe, who did not, it seems, well comprehend the principles of that machine, it was much disfigured in their imitations of it; and one of its main intentions, that of admitting a sufficient quantity of fresh air warmed in entering through the air-box, nearly defeated, by a pretended improvement, in lessening its passages to make more room for coals in a grate. On pretence of such improvements, they obtained patents for the invention, and for a while made great profits by the sale, till the public became sensible of that defect, in the expected operation. If the same thing should be attempted with this vase stove, it will be well for the buyer to examine thoroughly such pretended improvements, lest, being the mere pro-

ductions of ignorance, they diminish or defeat the advantages of the machine, and produce inconvenience and disappointment.

The method of burning smoke, by obliging it to descend through hot coals, may be of great use in heating the walls of a hot-house. In the common way, the horizontal passages or flues that are made to go and return in those walls, lose a great deal of their effect when they come to be foul with soot; for a thick blanket-like lining of soot prevents much of the hot air from touching and heating the brick work in its passage, so that more fire must be made as the flue grows fouler: but by burning the smoke they are kept always clean. The same method may also be of great advantage to those businesses in which large coppers or caldrons are to be heated.

ON IMPROVEMENTS IN NAVIGATION.

To Mons. Alphonse Le Roy, at Paris.

At Sea, on board the London Packet, Capt. Truxton.

August, 1785.

Sir,

Your learned writings on the navigation of the ancients, which contain a great deal of curious information, and your very ingenious contrivances for improving the modern sails, (*voiliure*,) of which I saw with great pleasure a successful trial on the river Seine, have induced me to submit to your consideration and judgment, some thoughts I have had on the latter subject.

Those mathematicians who have endeavored to improve the swiftness of vessels, by calculating to find the form of least resistance, seem to have considered a ship as a body moving through one fluid only, the water; and to have given little attention to the circumstances of her moving through another fluid, the air. It is true, that when a vessel sails right before the wind, this circumstance is of no importance, because the wind goes with her; but in every deviation from that course, the resistance of the air is something, and becomes greater in proportion as that deviation increases. I waive at present the consideration of those different degrees of resistance given by the air to that part of

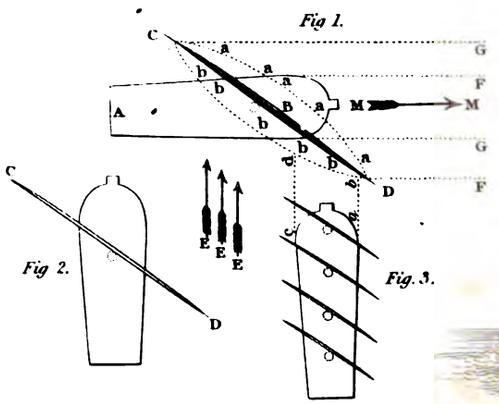


Fig 1.

Fig 2.

Fig. 3.

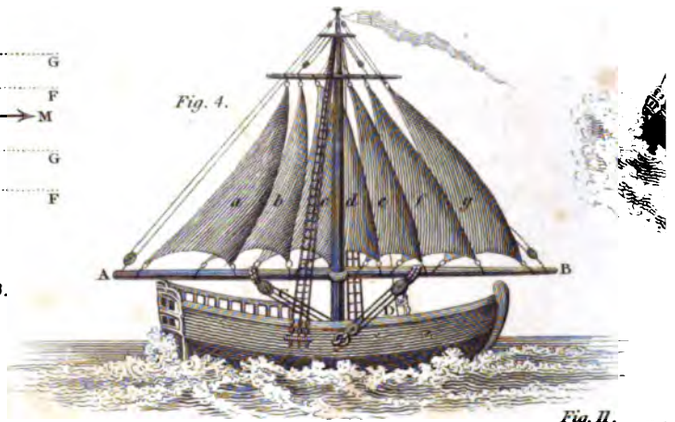


Fig. 4.

Fig. 11.

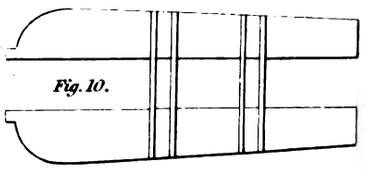


Fig. 10.

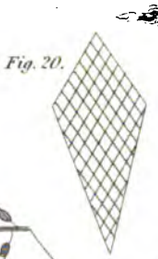


Fig. 20.

Fig. 18.

Fig. 17.

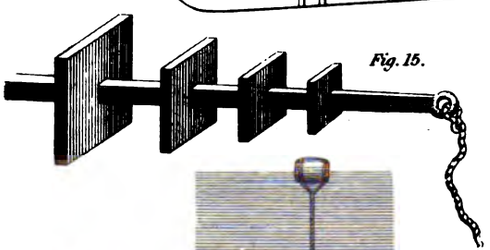


Fig. 15.

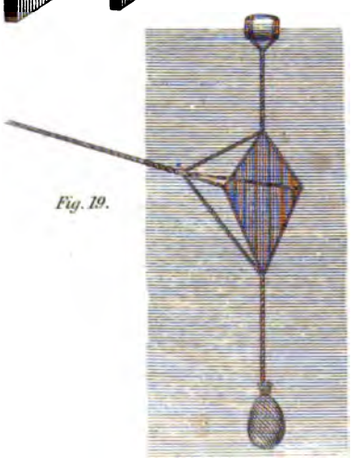


Fig. 19.

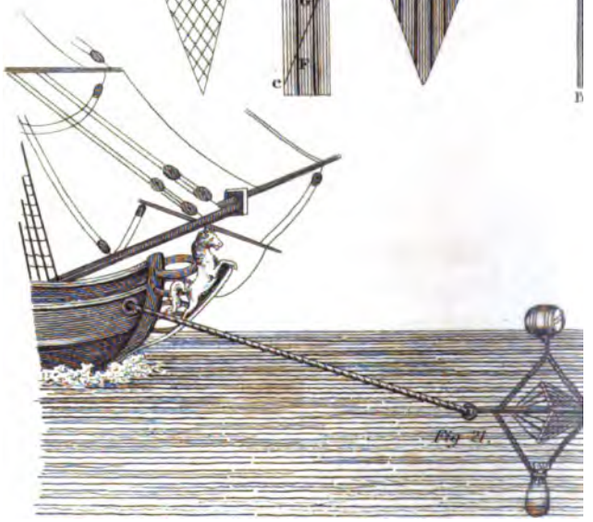


Fig. 21.

Published by Henry Colburn

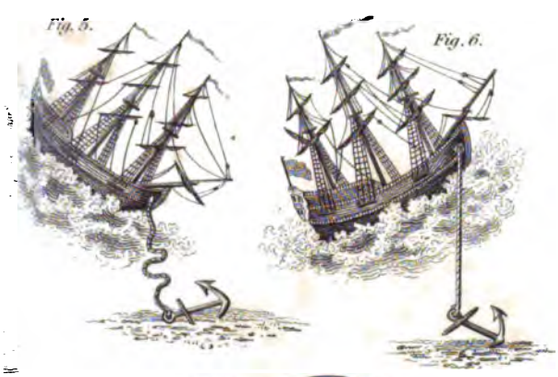


Fig. 5.

Fig. 6.

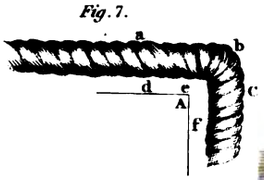


Fig. 7.

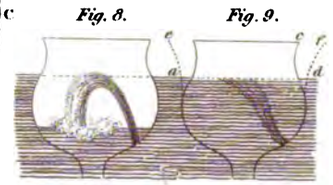


Fig. 8. Fig. 9.

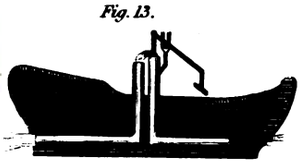


Fig. 13.

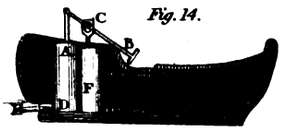


Fig. 14.

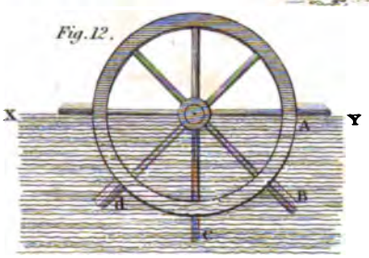


Fig. 12.

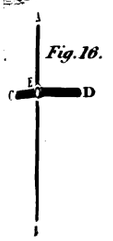


Fig. 16.

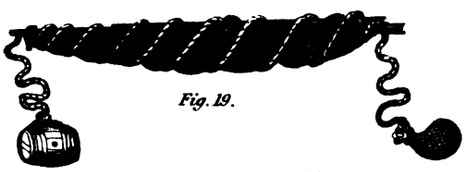


Fig. 19.

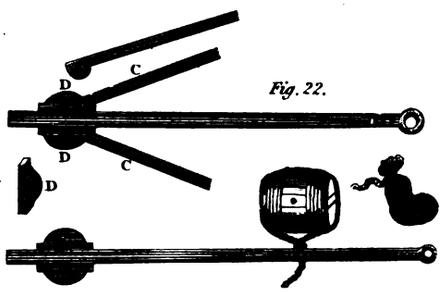


Fig. 22.

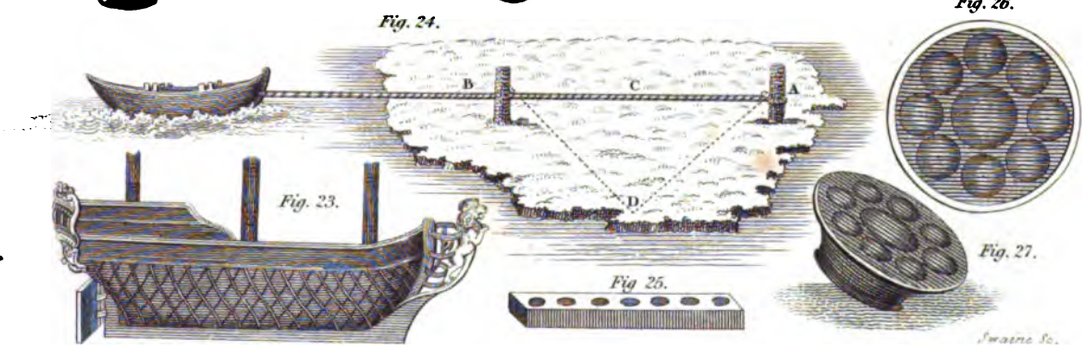


Fig. 24.

Fig. 23.

Fig. 25.

Fig. 26.

Fig. 27.

Swaine Sc.

, Conduit Street, May 1818.

the hull which is above water, and confine myself to that given to the sails; for their motion through the air is resisted by the air, as the motion of the hull through the water is resisted by the water, though with less force, as the air is a lighter fluid. And to simplify the discussion as much as possible, I would state one situation only, to wit, that of the wind upon the beam, the ship's course being directly across the wind: and I would suppose the sail set in an angle of 45 degrees with the keel, as in the following figure. (Plate VII. fig. 1.)

A B represents the body of the vessel, C D the position of the sail, E E E the direction of the wind, M M the line of motion. In observing this figure it will appear, that so much of the body of the vessel as is immersed in the water must, to go forward, remove out of its way what water it meets with between the pricked lines FF. And the sail, to go forward, must move out of its way all the air its whole dimension meets with between the pricked lines C G and D G. Thus both the fluids give resistance to the motion, each in proportion to the quantity of matter contained in the dimensions to be removed. And though the air is vastly lighter than the water, and therefore more easily removed, yet the dimension being much greater its effect is very considerable.

It is true that in the case stated, the resistance given by the air between those lines to the motion of the sail, is not apparent to the eye, because the greater force of the wind, which strikes it in the direction E E E, overpowers its effect and keeps the sail full in the curve a, a, a, a, a. But suppose the wind to cease, and the vessel in a calm to be impelled with the same swiftness by oars, the sail would then appear filled in the contrary curve, b, b, b, b, b, when prudent men would immediately perceive, that the air resisted its motion, and would order it to be taken in.

Is there any possible means of diminishing this resistance, while the same quantity of sail is exposed to the action of the wind, and therefore the same force obtained from it? I think there is; and that it may be done by dividing the sail into a number of parts, and placing those parts in a line one behind the other; thus instead of one sail extending from C to D, figure 2, if four sails, containing together the same quantity of canvas, were placed as in figure 3, each having one quarter of the dimensions of the great sail, and exposing a quarter of its surface to the wind, they would give a quarter of its force; so that the whole force obtained from the wind would be the same, while the resistance from the air would be nearly reduced to the space between the pricked lines *a b* and *c d*, before the foremost sail.

It may perhaps be doubted whether the resistance from the air would be so diminished; since possibly each of the following small sails having also air before it, which must be removed, the resistance on the whole would be the same.

This is then a matter to be determined by experiment. I will mention one that I many years since made with success for another purpose; and I will propose another small one easily made. If that too succeeds, I should think it worth while to make a larger, though at some expense, on a river boat; and perhaps time, and the improvements experience will afford, may make it applicable with advantage to larger vessels.

Having near my kitchen chimney a round hole of eight inches diameter, through which was a constant steady current of air, increasing or diminishing only as the fire increased or diminished, I contrived to place my jack so as to receive the current; and taking off the fliers, I fixed in their stead on the same pivot a round tin plate of nearly the same diameter with the hole; and having cut it in radial lines almost to the centre, so as to have six equal vanes, I gave to each of them the obliquity of forty-five degrees. They moved round, without the weight, by the impression only of the current of air, but too slowly for the purpose of roasting. I suspected that the air struck by the back of each vane might possibly, by its resistance retard the motion; and to try this, I cut each of them into two, and I placed the twelve, each having the same obliquity, in a line behind each other, when I perceived a great augmentation in its velocity, which encouraged me to divide them once more, and continuing the same obliquity, I placed the twenty-four behind each other in a line, when the force of the wind being the same, and the surface of vane the same, they moved round with much greater rapidity, and perfectly answered my purpose.

The second experiment that I propose, is to take two playing cards of the same dimensions, and cut one of them transversely into eight equal pieces; then with a needle string them upon two threads one near each end, and place them so upon the threads that, when hung up, they may be one exactly over the other, at a distance equal to their breadth, each in a horizontal position; and let a small weight, such as a bird-shot, be hung under them, to make them fall in a straight line when let loose. Suspend also the whole card by threads from its four corners, and hang to it an equal weight, so as to draw it downwards when let fall, its whole breadth pressing against the air. Let those two bodies be attached, one of them to one end of a thread a yard long, the other,

to the other end. Extend a twine under the ceiling of a room, and put through it at thirty inches' distance two pins bent in the form of fish-hooks. On these two hooks hang the two bodies, the thread that connects them extending parallel to the twine, which thread being cut, they must begin to fall at the same instant. If they take equal time in falling to the floor, it is a proof that the resistance of the air is in both cases equal. If the whole card requires a longer time, it shows that the sum of the resistances to the pieces of the cut card is not equal to the resistance of the whole one.[1]

This principle so far confirmed, I would proceed to make a larger experiment with a shallop, which I would rig in this manner. Same plate, fig. 4.

A B is a long boom, from which are hoisted seven jibs, a, b, c, d, e, f, g, each a seventh part of the whole dimensions, and as much more as will fill the whole space when set in an angle of forty-five degrees, so that they may lap when going before the wind, and hold more when going large. Thus rigged, when going right before the wind, the boom should be brought at right angles with the keel, by means of the sheet ropes C D, and all the sails hauled flat to the boom.

These positions of boom and sails to be varied as the wind quarters. But when the wind is on the beam, or when you would turn to windward, the boom is to be hauled right fore and aft, and the sails trimmed according as the wind is more or less against your course.

It seems to me that the management of a shallop so rigged would be very easy, the sails being run up and down separately, so that more or less sail may be made at pleasure; and I imagine, that there being full as much sail exposed to the force of the wind which impels the vessel in its course, as if the whole were in one piece, and the resistance of the dead air against the foreside of the sail being diminished, the advantage of swiftness would be very considerable; besides that the vessel would lie nearer the wind.

Since we are on the subject of improvements in navigation, permit me to detain you a little longer with a small relative observation. Being, in one of my voyages, with ten merchant-ships under convoy of a frigate at anchor in Torbay, waiting for a wind to go to the westward, it came fair, but brought in

[1] The motion of the vessel made it inconvenient to try this simple experiment at sea, when the proposal of it was written. But it has been tried since we came on shore, and succeeded as the other.

with it a considerable swell. A signal was given for weighing, and we put to sea all together; but three of the ships left their anchors, their cables parting just as their anchors came a-peak. Our cable held, and we got up our anchor; but the shocks the ship felt before the anchor got loose from the ground made me reflect on what might possibly have caused the breaking of the other cables; and I imagined it might be the short bending of the cable just without the hause-hole, from a horizontal to an almost vertical position, and the sudden violent jerk it receives by the rising of the head of the ship on the swell of a wave while in that position. For example, suppose a vessel hove up so as to have her head nearly over her anchor, which still keeps its hold, perhaps in a tough bottom; if it were calm, the cable still out would form nearly a perpendicular line, measuring the distance between the hause-hole and the anchor; but if there is a swell, her head in the trough of the sea will fall below the level, and when lifted on the wave will be much above it. In the first case the cable will hang loose and bend perhaps as in figure 5. In the second case, figure 6, the cable will be drawn straight with a jerk, must sustain the whole force of the rising ship, and must either loosen the anchor, resist the rising force of the ship, or break. But why does it break at the hause-hole?

Let us suppose it a cable of three inches diameter, and represented by figure 7. If this cable is to be bent round the corner A, it is evident that either the part of the triangle contained between the letters a, b, c, must stretch considerably, and those most that are nearest the surface; or, that the parts between d, e, f, must be compressed; or both, which most probably happens. In this case the lower half of the thickness affords no strength against the jerk, it not being strained; the upper half bears the whole, and the yarns near the upper surface being first and most strained, break first, and the next yarns follow; for in this bent situation they cannot bear the strain altogether, and each contributes its strength to the whole, as they do when the cable is strained in a straight line.

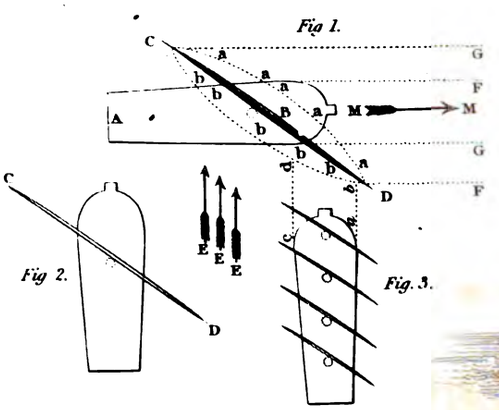
To remedy this, methinks it would be well to have a kind of large pulley wheel, fixed in the hause-hole, suppose of two feet diameter, over which the cable might pass; and being there bent gradually to the round of the wheel, would thereby be more equally strained, and better able to bear the jerk, which may save the anchor, and by that means in the course of the voyage to save the ship.

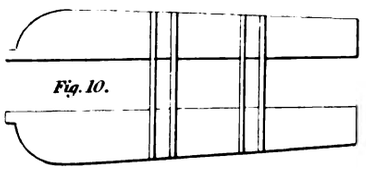
One maritime observation more shall finish this letter. I have been a reader

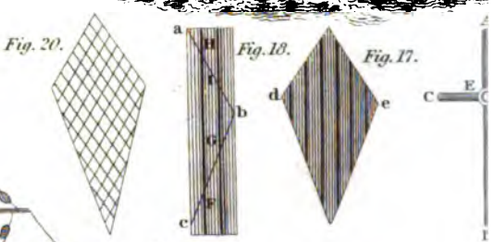
of newspapers now near seventy years, and I think few years pass without an account of some vessel met with at sea, with no living soul on board, and so many feet of water in her hold, which vessel has nevertheless been saved and brought into port: and when not met with at sea, such forsaken vessels have often come ashore on some coast. The crews, who have taken to their boats, and thus abandoned such vessels, are sometimes met with and taken up at sea by other ships, sometimes reach a coast, and are sometimes never heard of. Those that give an account of quitting their vessels generally say, that she sprung a leak, that they pumped for some time, that the water continued to rise upon them, and that, despairing to save her, they had quitted her lest they should go down with her. It seems by the event that this fear was not always well-founded, and I have endeavored to guess at the reason of the people's too hasty discouragement.

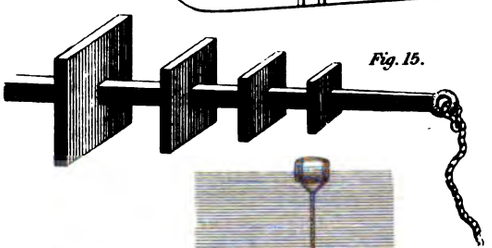
When a vessel springs a leak near her bottom, the water enters with all the force given by the weight of the column of water without, which force is in proportion to the difference of level between the water without and that within. It enters therefore with more force at first and in greater quantity, than it can afterwards when the water within is higher. The bottom of the vessel too is narrower, so that the same quantity of water coming into that narrow part, rises faster than when the space for it to flow is larger. This helps to terrify. But as the quantity entering is less and less as the surfaces without and within become more nearly equal in height, the pumps that could not keep the water from rising at first, might afterwards be able to prevent its rising higher; and the people might have remained on board in safety, without hazarding themselves in an open boat on the wide ocean. (Same plate, fig. 8.)

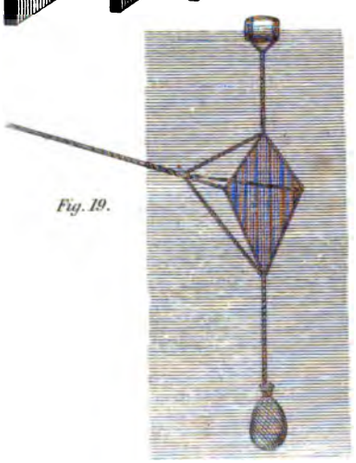
Besides the greater equality in the height of the two surfaces, there may sometimes be other causes that retard the farther sinking of a leaky vessel. The rising water within may arrive at quantities of light wooden work, empty chests, and particularly empty water-casks, which if fixed so as not to float themselves may help to sustain her. Many bodies which compose a ship's cargo may be specifically lighter than water; all these when out of water are an additional weight to that of the ship, and she is in proportion pressed deeper into the water; but as soon as these bodies are immersed, they weigh no longer on the ship; but on the contrary, if fixed, they help to support her, in proportion as they are specifically lighter than the water. And it should be remembered, that the largest body of a ship may be so balanced in the water, that an ounce

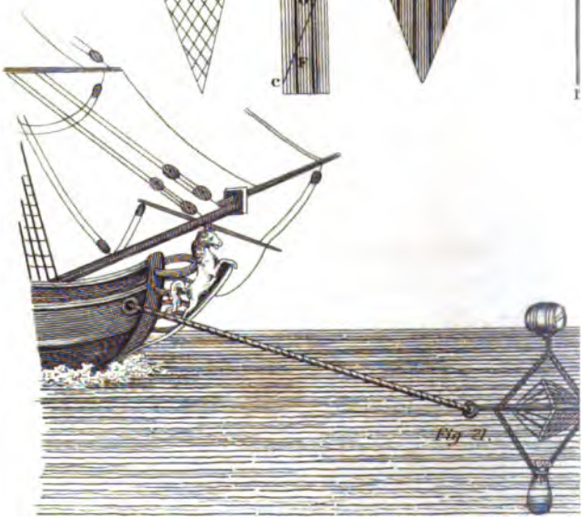












Published by Henry Colbur

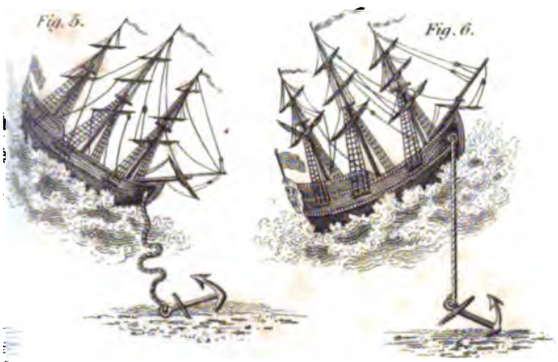


Fig. 5.

Fig. 6.

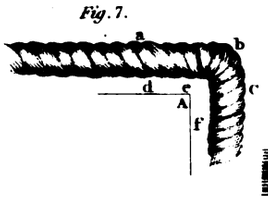


Fig. 7.

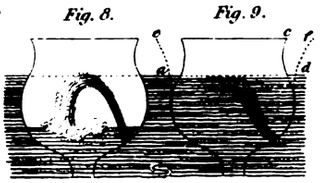


Fig. 8. Fig. 9.

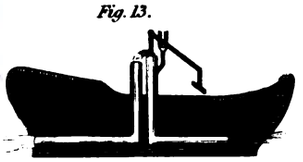


Fig. 13.

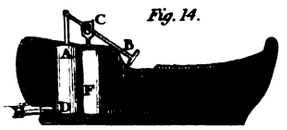


Fig. 14.

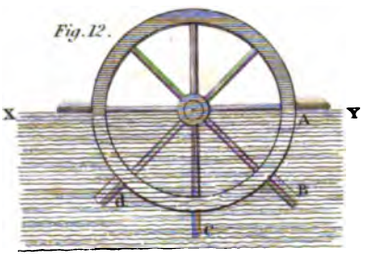


Fig. 12.

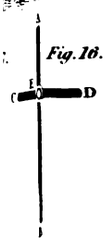


Fig. 16.

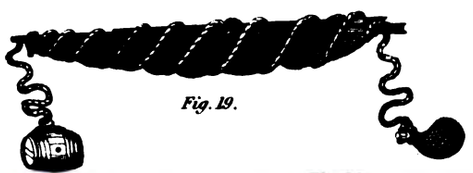


Fig. 19.

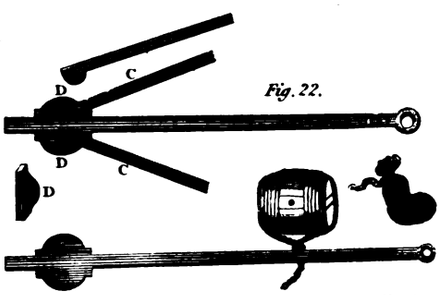


Fig. 22.

Fig. 26.

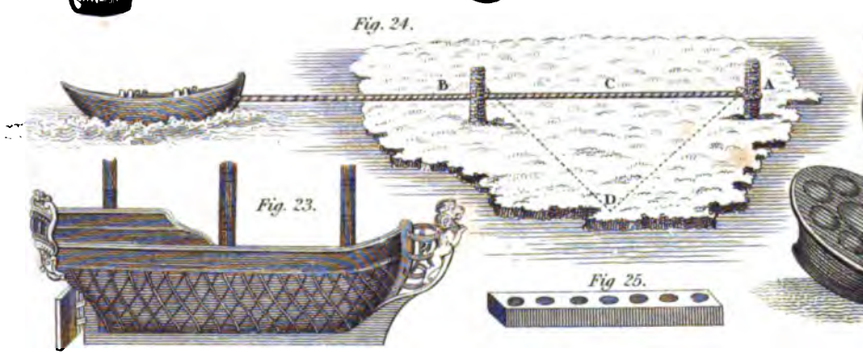


Fig. 24.

Fig. 23.

Fig. 25.

Fig. 27.

Swaine Sc.

Conduit Street, May 1818.

slackens. But some have their outriggers to leeward, which, resting on the water, support the boat so as to keep her upright when pressed down by the wind. Their boats moved by oars, or rather paddles, are for long voyages, fixed two together by cross bars of wood that keep them at some distance from each other, and so render their oversetting next to impossible. How far this may be practicable in larger vessels, we have not yet sufficient experience. I know of but one trial made in Europe, which was about one hundred years since, by Sir William Petty. He built a double vessel, to serve as a packet boat between England and Ireland. Her model still exists in the museum of the Royal Society, where I have seen it. By the accounts we have of her, she answered well the purpose of her construction, making several voyages; and though wrecked at last by a storm, the misfortune did not appear owing to her particular construction, since many other vessels of the common form were wrecked at the same time. The advantage of such a vessel is, that she needs no ballast, therefore swims either lighter or will carry more goods; and that passengers are not so much incommoded by her rolling: to which may be added, that if she is to defend herself by her cannon, they will probably have more effect, being kept more generally in a horizontal position, than those in common vessels. I think, however, that it would be an improvement of that model, to make the sides which are opposed to each other perfectly parallel, though the other sides are formed as in common; thus, figure 10.

The building of a double ship would indeed be more expensive in proportion to her burthen; and that perhaps is sufficient to discourage the method.

The accident of fire is generally well guarded against by the prudent captain's strict orders against smoking between decks, or carrying a candle there out of a lantern. But there is one dangerous practice which frequent terrible accidents resulting therefrom have not yet been sufficient to abolish; that of carrying store-spirits to sea in casks. Two large ships, the Serapis and the Duke of Athol, one an East-Indiaman, the other a frigate, have been burnt within these two last years, and many lives miserably destroyed, by drawing spirits out of a cask near a candle. It is high time to make it a general rule, that no spirits shall be drawn by light of candle

The misfortune by a stroke of lightning I have in my former writings endeavored to show a method of guarding against, by a chain and pointed rod, extending, when run up, from above the top of the mast to the sea. These instruments are now made and sold at a reasonable price by Nairne & Co. in

London, and there are several instances of success attending the use of them. They are kept in a box, and may be run up and fixed in about five minutes, on the apparent approach of a thunder gust.

Of the meeting and shocking with other ships in the night I have known two instances in voyages between London and America. In one both ships arrived though much damaged, each reporting their belief that the other must have gone to the bottom. In the other, only one got to port; the other was never afterwards heard of. These instances happened many years ago, when the commerce between Europe and America was not a tenth part of what it is at present; ships of course thinner scattered, and the chance of meeting proportionably less. It has long been the practice to keep a *look-out before* in the channel, but at sea it has been neglected. If it is not at present thought worth while to take that precaution, it will in time become of more consequence; since the number of ships at sea is continually augmenting. A drum frequently beat, or a bell rung in a dark night, might help to prevent such accidents.

Islands of ice are frequently seen off the banks of Newfoundland, by ships going between North America and Europe. In the day time they are easily avoided, unless in a very thick fog. I remember two instances of ships running against them in the night. The first lost her bowsprit, but received little other damage. The other struck where the warmth of the sea had wasted the ice next to it, and a part hung over above. This perhaps saved her, for she was under great way; but the upper part of the cliff taking her fore-topmast, broke the shock, though it carried away the mast. She disengaged herself with some difficulty, and got safe into port; but the accident shows the possibility of other ships being wrecked and sunk by striking those vast masses of ice, of which I have seen one that we judged to be seventy feet high above the water, consequently eight times as much under water; and it is another reason for keeping a good *look-out before*, though far from any coast that may threaten danger.

It is remarkable, that the people we consider as savages have improved the art of sailing and rowing boats in several points beyond what we can pretend to. We have no sailing-boats equal to the flying proas of the South Seas; no rowing or paddling-boat equal to that of the Greenlanders for swiftness and safety. The birch canoes of the North-American Indians have also some advantageous properties. They are so light that two men may carry one of them over land, which is capable of carrying a dozen upon the water; and in heeling they are not so subject to take in water as our boats, the sides of which

are lowest in the middle where it is most likely to enter, this being highest in that part, as in figure 11.

The Chinese are an enlightened people, the most anciently civilised of any existing; and their arts are ancient, a presumption in their favor: their method of rowing their boats differs from ours, the oars being worked either two a-stern as we scull, or on the sides, with the same kind of motion, being hung parallel to the keel on a rail, and always acting in the water, not perpendicular to the side as ours are, nor lifted out at every stroke, which is a loss of time, and the boat in the interval loses motion. They see our manner, and we theirs, but neither are disposed to learn of or copy the other.

To the several means of moving boats mentioned above, may be added the singular one lately exhibited at Javelle, on the Seine below Paris, where a clumsy boat was moved across that river in three minutes by rowing, not in the water, but in the air, that is, by whirling round a set of windmill vanes fixed to a horizontal axis, parallel to the keel, and placed at the head of the boat. The axis was bent into an elbow at the end, by the help of which it was turned by one man at a time. I saw the operation at a distance. The four vanes appeared to be about five feet long, and perhaps two and an half wide. The weather was calm. The labor appeared to be great for one man, as the two several times relieved each other. But the action upon the air by the oblique surfaces of the vanes must have been considerable, as the motion of the boat appeared tolerably quick going and returning; and she returned to the same place whence she first set out, notwithstanding the current. This machine is since applied to the moving of air-balloons: an instrument similar may be contrived to move a boat by turning under water.

Several mechanical projectors have at different times proposed to give motion to boats, and even to ships, by means of circular rowing, or paddles placed on the circumference of wheels, to be turned constantly on each side of the vessel; but this method, though frequently tried, has never been found so effectual as to encourage a continuance of the practice. I do not know that the reason has hitherto been given. Perhaps it may be this, that great part of the force employed contributes little to the motion. For instance, (fig. 12.) of the four paddles a, b, c, d, all under water, and turning to move a boat from X to Y, c has the most power, b nearly though not quite as much, their motion being nearly horizontal; but the force employed in moving a, is consumed in pressing almost downright upon the water till it comes to the place of b; and the force em-

ployed in moving d is consumed in lifting the water till d arrives at the surface; by which means much of the labor is lost. It is true, that by placing the wheels higher out of the water, this waste labor will be diminished in a calm, but where a sea runs, the wheels must unavoidably be often dipt deep in the waves, and the turning of them thereby rendered very laborious to little purpose.

Among the various means of giving motion to a boat, that of M. Bernoulli appears one of the most singular, which was to have fixed in the boat a tube in the form of an L, the upright part to have a funnel-kind of opening at top, convenient for filling the tube with water; which, descending and passing through the lower horizontal part, and issuing in the middle of the stern, but under the surface of the river, should push the boat forward. There is no doubt that the force of the descending water would have a considerable effect, greater in proportion to the height from which it descended; but then it is to be considered, that every bucket full pumped or dipped up into the boat, from its side or through its bottom, must have its *vis inertiæ* overcome so as to receive the motion of the boat, before it can come to give motion by its descent; and that will be a deduction from the moving power. To remedy this, I would propose the addition of another such L pipe, and that they should stand back to back in the boat thus, (Plate VII. fig. 13;) the forward one being worked as a pump, and sucking in the water at the head of the boat, would draw it forward while pushed in the same direction by the force at the stern. And after all, it should be calculated whether the labor of pumping would be less than that of rowing. A fire-engine might possibly in some cases be applied in this operation with advantage.

Perhaps this labor of raising water might be spared, and the whole force of a man applied to the moving of a boat by the use of air instead of water. Suppose the boat constructed in this form, (Plate VII. fig. 14:) A a tube round or square, of two feet in diameter, in which a piston may move up and down: the piston to have valves in it, opening inwards, to admit air when the piston rises; and shutting, when it is forced down by means of the lever B turning on the centre C. The tube to have a valve D, to open when the piston is forced down, and let the air pass out at E, which striking forcibly against the water abaft, must push the boat forward. If there is added an air-vessel F, properly valved and placed, the force would continue to act while a fresh stroke is taken with the lever. The boatman might stand with his back to the stern, and putting his hands behind him, work the motion by taking hold of the cross bar at B, while

another should steer; or if he had two such pumps, one on each side of the stern, with a lever for each hand, he might steer himself by working occasionally more or harder with either hand, as watermen now do with a pair of sculls. There is no position in which the body of a man can exert more strength than in pulling right upwards. To obtain more swiftness, greasing the bottom of a vessel is sometimes used, and with good effect. I do not know that any writer has hitherto attempted to explain this. At first sight one would imagine, that though the friction of a hard body, sliding on another hard body, and the resistance occasioned by that friction, might be diminished by putting grease between them; yet that a body sliding on a fluid, such as water, should have no need of, nor receive any advantage from such greasing. But the fact is not disputed. And the reason perhaps may be this—The particles of water have a mutual attraction, called the attraction of adhesion. Water also adheres to wood, and to many other substances, but not to grease: on the contrary they have a mutual repulsion; so that it is a question whether when oil is poured on water, they ever actually touch each other; for a drop of oil upon water, instead of sticking to the spot where it falls, as it would if it fell on a looking-glass, spreads instantly to an immense distance in a film extremely thin, which it could not easily do if it touched and rubbed or adhered even in a small degree to the surface of the water. Now the adhesive force of water to itself, and to other substances, may be estimated from the weight of it necessary to separate a drop which adheres, while growing, till it has weight enough to force the separation and break the drop off. Let us suppose the drop to be the size of a pea, then there will be as many of these adhesions as there are drops of that size touching the bottom of a vessel, and these must be broken by the moving power, every step of her motion that amounts to a drop's breadth: and there being no such adhesions to break between the water and a greased bottom, may occasion the difference.

So much respecting the motion of vessels. But we have sometimes occasion to stop their motion; and if a bottom is near enough we can cast anchor: where there are no soundings, we have as yet no means to prevent driving in a storm, but by lying-to, which still permits driving at the rate of about two miles an hour; so that in a storm continuing fifty hours, which is not an uncommon case, the ship may drive one hundred miles out of her course; and should she in that distance meet with a lee-shore, she may be lost.

To prevent this driving to leeward in deep water, a swimming anchor is wanting, which ought to have these properties.

1. It should have a surface so large as, being at the end of a hauser in the water, and placed perpendicularly, should hold so much of it, as to bring the ship's head to the wind, in which situation the wind has least power to drive her.

2. It should be able by its resistance to prevent the ship's receiving way.

3. It should be capable of being situated below the heave of the sea, but not below the undertow.

4. It should not take up much room in the ship.

5. It should be easily thrown out, and put into its proper situation.

6. It should be easy to take in again, and stow away.

An ingenious old mariner, whom I formerly knew, proposed, as a swimming anchor for a large ship, to have a stem of wood twenty-five feet long and four inches square, with four boards of 18, 16, 14 and 12 feet long, and one foot wide, the boards to have their substance thickened several inches in the middle by additional wood, and to have each a four inch square hole through its middle, to permit its being slipped on occasionally upon the stem, and at right angles with it; where all being placed and fixed at four feet distance from each other, it would have the appearance of the old mathematical instrument called a forestaff. This thrown into the sea, and held by a hauser veered out at some length, he conceived would bring a vessel up, and prevent her driving, and when taken in might be stowed away by separating the boards from the stem. Figure 15. Probably such a swimming anchor would have some good effect; but it is subject to this objection, that lying on the surface of the sea, it is liable to be hove forward by every wave, and thereby give so much leave for the ship to drive.

Two machines for this purpose have occurred to me, which, though not so simple as the above, I imagine would be more effectual, and more easily manageable. I will endeavor to describe them, that they may be submitted to your judgment, whether either would be serviceable; and if they would, to which we should give the preference.

The first is to be formed, and to be used in the water on almost the same principles with those of a paper kite used in the air. Only as the paper kite rises in the air, this is to descend in the water. Its dimensions will be different for ships of different size.

To make one of suppose fifteen feet high; take a small spar of that length for the back-bone, AB, Plate VII. figure 16; a smaller of half that length, C D, for

the cross piece. Let these be united by a bolt at E, yet so as that by turning on the bolt they may be laid parallel to each other. Then make a sail of strong canvas, in the shape of figure 17. To form this, without waste of sail-cloth, sew together pieces of the proper length, and for half the breadth, as in figure 18, then cut the whole in the diagonal lines, a, b, c, and turn the piece F so as to place its broad part opposite to that of the piece G, and the piece H in like manner opposite to I, which when all sewed together will appear as in fig. 17. This sail is to be extended on the cross of fig. 16, the top and bottom points well secured to the ends of the long spar; the two side points d, e, fastened to the ends of two cords, which coming from the angle of the loop (which must be similar to the loop of a kite) pass through two rings at the ends of the short spar, so as that on pulling upon the loop the sail will be drawn to its extent. The whole may, when on board, be furled up, as in figure 19, having a rope from its broad end, to which is tied a bag of ballast for keeping that end downwards when in the water, and at the other end another rope with an empty keg at its end to float on the surface; this rope long enough to permit the kite's descending into the undertow, or if you please, lower into still water. It should be held by a hauser. To get it home easily, a small loose rope may be veered out with it, fixed to the keg. Hauling on that rope will bring the kite home with small force, as it will then come end-ways.

It seems probable that such a kite at the end of a long hauser would keep a ship with her head to the wind, and, resisting every tug, would prevent her driving so fast as when her side is exposed to it, and nothing to hold her back. If only half the driving is prevented, so as that she moves but fifty miles instead of the hundred during a storm, it may be some advantage, both in holding so much distance as is saved, and in keeping from a lee-shore. If single canvas should not be found strong enough to bear the tug without splitting, it may be doubled, or strengthened by a netting behind it, represented by figure 20.

The other machine for the same purpose, is to be made more in the form of an umbrella, as represented, figure 21. The stem of the umbrella a square spar of proper length, with four moveable arms, of which two are represented C, C, figure 22. These arms to be fixed in four joint cleats, as D, D, &c. one on each side of the spar, but so as that the four arms may open by turning on a pin in the joint. When open they form a cross, on which a four-square canvas sail is to be extended, its corners fastened to the ends of the four arms. Those ends are also to be stayed by ropes fastened to the stem or spar, so as to keep

them short of being at right angles with it: and to the end of one of the arms should be hung the small bag of ballast, and to the end of the opposite arm the empty keg. This, on being thrown into the sea, would immediately open; and when it had performed its function, and the storm over, a small rope from its other end being pulled on, would turn it, close it, and draw it easily home to the ship. This machine seems more simple in its operation, and more easily manageable than the first, and perhaps may be as effectual.[1]

Vessels are sometimes retarded, and sometimes forwarded in their voyages, by currents at sea, which are often not perceived. About the year 1769, or 70, there was an application made by the board of customs at Boston, to the lords of the treasury in London, complaining that the packets between Falmouth and New York, were generally a fortnight longer in their passages than merchant-ships from London to Rhode Island, and proposing that for the future they should be ordered to Rhode Island instead of New York. Being then concerned in the management of the American post-office, I happened to be consulted on the occasion; and it appearing strange to me that there should be such a difference between two places, scarce a day's run asunder, especially when the merchant-ships are generally deeper laden, and more weakly manned than the packets, and had from London the whole length of the river and channel to run before they left the land of England, while the packets had only to go from Falmouth, I could not but think the fact misunderstood or misrepresented. There happened then to be in London a Nantucket sea-captain of my acquaintance, to whom I communicated the affair. He told me he believed the fact might be true; but the difference was owing to this, that the Rhode Island captains were acquainted with the gulph stream, which those of the English packets were not. We are well acquainted with that stream, said he, because in our pursuit of whales, which keep near the sides of it, but are not to be met with in it, we run down along the sides, and frequently cross it to change our side; and in crossing it have sometimes met and spoken with those packets, who were in the middle of it, and stemming it. We have informed them that they were stemming a current that was running against them at the rate of three miles an hour, and advised them to cross it and get out of it; but

[1] Captain Truxton, on board whose ship this was written, executed this proposed machine: he gave six arms to the umbrella, and joined them to the stem by iron hinges: the canvas was double. He took it with him to China in 1786.

they were too wise to be counselled by simple American fishermen. When the winds are but light, he added, they are carried back by the current more than they are forwarded by the wind: and if the wind is good, the subtraction of 70 miles a-day from their course is of some importance. I then observed it was a pity no notice was taken of this current upon the charts, and requested him to mark it out for me, which he readily complied with, adding directions for avoiding it in sailing from Europe to North America. I procured it to be engraved by order from the general post-office, on the old chart of the Atlantic, at Mount and Page's, Tower-hill; and copies were sent down to Falmouth for the captains of the packets, who however slighted it; but it is since printed in France, of which edition I hereto annex a copy.[1]

This stream is probably generated by the great accumulation of water on the eastern coast of America between the tropics, by the trade-winds which constantly blow there. It is known that a large piece of water ten miles broad, and generally only three feet deep, has by a strong wind had its waters driven to one side, and sustained so as to become six feet deep, while the windward side was laid dry. This may give some idea of the quantity heaped up on the American coast, and the reason of its running down in a strong current through the islands into the bay of Mexico, and thence issuing through the Gulph of Florida, and proceeding along the coast to the banks of Newfoundland, where it turns off towards and runs down through the Western Islands. Having since crossed this stream several times in passing between America and Europe, I have been attentive to sundry circumstances relating to it, by which to know when one is in it; and besides the gulph weed with which it is interspersed, I find that it is always warmer than the sea on either side of it, and that it does not sparkle in the night. I annex hereto the observations made with the thermometer in two voyages,[2] and possibly may add a third. It will appear from them, that the thermometer may be an useful instrument to a navigator, since currents coming from the northward into southern seas, will probably be found colder than the water of those seas, as the currents from southern seas into northern are found warmer. And it is not to be wondered that so vast

[1] The map is constructed so as to embrace in one view, the theory of the Gulph Stream and the theory of the migration of fish; some attention has been paid also to Volney's suggestions on the subject of the Gulph Stream. See the plate.

[2] See page 543.

a body of deep warm water, several leagues wide, coming from between the tropics, and issuing out of the gulph into the northern seas, should retain its warmth longer than the twenty or thirty days required to its passing the banks of Newfoundland. The quantity is too great, and it is too deep to be suddenly cooled by passing under a cooler air. The air immediately over it, however, may receive so much warmth from it as to be rarefied and rise, being rendered lighter than the air on each side of the stream; hence those airs must flow in to supply the place of the rising warm air, and, meeting each other, form those tornadoes and water-spouts frequently met with, and seen near and over the stream; and as the vapor from a cup of tea in a warm room, and the breath of an animal in the same room, are hardly visible, but become sensible immediately when out in the cold air, so the vapor from the gulph stream, in warm latitudes is scarcely visible; but when it comes into the cool air from Newfoundland, it is condensed into the fogs, for which those parts are so remarkable.

The power of wind to raise water above its common level in the sea is known to us in America, by the high tides occasioned in all our sea-ports when a strong north-easter blows against the gulph stream.

The conclusion from these remarks is, that a vessel from Europe to North America may shorten her passage by avoiding to stem the stream, in which the thermometer will be very useful; and a vessel from America to Europe may do the same by the same means of keeping in it. It may have often happened accidentally, that voyages have been shortened by these circumstances. It is well to have the command of them.

But may there not be another cause, independent of winds and currents, why passages are generally shorter from America to Europe than from Europe to America? This question I formerly considered in the following short paper.

On board the Pennsylvania Packet, Captain Osborne.

At Sea, April 5, 1775.

"Suppose a ship to make a voyage eastward from a place in lat. 40° north, to a place in lat. 50° north, distance in longitude 75 degrees.

"In sailing from 40 to 50, she goes from a place where a degree of longitude is about eight miles greater than in the place she is going to. A degree is equal to four minutes of time; consequently the ship in the harbor she leaves, partaking of the diurnal motion of the earth, moves two miles in a minute faster, than when in the port she is going to; which is 120 miles in an hour.

"This motion in a ship and cargo is of great force; and if she could be lifted up suddenly from the harbor in which she lay quiet, and set down instantly in the latitude of the port she was bound to, though in a calm, that force contained in her would make her run a great way at a prodigious rate. This force must be lost gradually in her voyage, by gradual impulse against the water, and probably thence shorten the voyage. Query, In returning does the contrary happen, and is her voyage thereby retarded and lengthened?"[1]

Would it not be a more secure method of planking ships, if, instead of thick single planks laid horizontally, we were to use planks of half the thickness, and lay them double and across each other as in Plate VII. figure 23? To me it seems that the difference of expense would not be considerable, and that the ship would be both tighter and stronger.

The securing of the ship is not the only necessary thing; securing the health of the sailors, a brave and valuable order of men, is likewise of great importance. With this view the methods so successfully practised by Captain Cook in his long voyages cannot be too closely studied or carefully imitated. A full account of those methods is found in Sir John Pringle's speech, when the medal of the Royal Society was given to that illustrious navigator. I am glad to see in his last voyage that he found the means effectual which I had proposed for preserving flour, bread, &c. from moisture and damage. They were found dry and good after being at sea four years. The method is described in my philosophical works, page 452, fifth edition.[2] In the same, page 469, 470, is pro-

---

[1] Since this paper was read at the Society in Philadelphia, an ingenious member, Mr. Patterson, convinced the writer that the returning voyage would not, from this cause, be retarded.

[2] To Mr. P. Franklin, Newport, Rhode-Island.

Best method of securing a Powder Magazine from Lightning—Preserving Powder, Flour, &c.

——— You may acquaint the gentleman that desired you to inquire my opinion of the best method of securing a powder magazine from lightning, that I think they cannot do better than to

posed a means of allaying thirst in case of want of fresh water.[1] This has since been practised in two instances with success. Happy if their hunger, when the

---

erect a mast not far from it, which may reach fifteen or twenty feet above the top of it, with a thick iron rod in one piece fastened to it, pointed at the highest end, and reaching down through the earth till it comes to water. Iron is a cheap metal; but if it were dearer, as this is a public thing, the expense is insignificant; therefore I would have the rod at least an inch thick, to allow for its gradually wasting by rust; it will last as long as the mast, and may be renewed with it. The sharp point for five or six inches should be gilt.

But there is another circumstance of importance to the strength, goodness, and usefulness of the powder, which does not seem to have been enough attended to. I mean, the keeping it perfectly dry. For want of a method of doing this, much is spoiled in damp magazines, and much so damaged as to become of little value.—If, instead of barrels, it were kept in cases of bottles well corked, or in large tin canisters, with small covers shutting close by means of oiled paper between, or covering the joining on the canister; or if in barrels, then the barrels lined with thin sheet lead; no moisture in either of these methods could possibly enter the powder, since glass and metals are both impervious to water.

By the latter of these means you see tea is brought dry and crisp from China to Europe, and thence to America, though it comes all the way by sea in the damp hold of a ship. And by this method, grain, meal, &c. if well dried before it is put up, may be kept for ages sound and good.

There is another thing very proper to line small barrels with; it is what they call tin-foil, or leaf-tin, being tin milled between rollers till it becomes as thin as paper, and more pliant, at the same time that its texture is extremely close. It may be applied to the wood with common paste, made with boiling water thickened with flour; and, so laid on, will lie very close and stick well: but I should prefer a hard sticky varnish for that purpose, made of linseed oil much boiled. The heads might be lined separately, the tin wrapping a little round their edges. The barrel, while the lining is laid on, should have the end hoops slack, so that the staves standing at a little distance from each other, may admit the head into its groove. The tin-foil should be plyed into the groove. Then, one head being put in, and that end hooped tight, the barrel would be fit to receive the powder, and when the other head is put in and the hoops drove up, the powder would be safe from moisture even if the barrel were kept under water. This tin-foil is but about eighteen pence sterling a pound, and is so extremely thin, that I imagine a pound of it would line three or four powder-barrels.

I am, &c. B. FRANKLIN.

[1] *Salt Water rendered fresh by Distillation.—Method of relieving Thirst by Sea Water.*

TO MISS STEVENSON.

Craven-street, August 10, 1761.

In yours of May 19, which I have before me, you speak of the ease with which salt water may be made fresh by distillation, supposing it to be, as I had said, that in evaporation the air would take up water, but not the salt that was mixed with it. It is true that distilled sea water will not be salt; but there are other disagreeable qualities that rise with the water in distillation; which indeed

other provisions are consumed, could be relieved as commodiously; and perhaps in time this may be found not impossible. An addition might be made to their present vegetable provision, by drying various roots in slices by the means of an oven. The sweet potatoe of America and Spain is excellent for this purpose. Other potatoes, with carrots, parsnips, and turnips, might be prepared and preserved in the same manner.

With regard to make-shifts in cases of necessity, seamen are generally very ingenious themselves. They will excuse however the mention of two or three. If they happen in any circumstance, such as after ship-wreck, taking to their boat, or the like, to want a compass, a fine sewing-needle laid on clear water in a cup will generally point to the north, most of them being a little magnetical, or may be made so by being strongly rubbed or hammered, lying in a north and south direction. If their needle is too heavy to float by itself, it may

---

several besides Dr. Hales have endeavored by some means to prevent; but as yet their methods have not been brought much into use.

I have a singular opinion on this subject, which I will venture to communicate to you, though I doubt you will rank it among my whims. It is certain that the skin has *imbibing* as well as *discharging* pores; witness the effects of a blistering plaister, &c. I have read that a man, hired by a physician to stand by way of experiment in the open air naked during a moist night, weighed near three pounds heavier in the morning. I have often observed myself, that however thirsty I may have been before going into the water to swim, I am never long so in the water. These imbibing pores, however, are very fine, perhaps fine enough in filtering to separate salt from water; for though I have soaked (by swimming, when a boy) several hours in the day for several days successively in salt water, I never found my blood and juices salted by that means, so as to make me thirsty or feel a salt taste in my mouth: and it is remarkable, that the flesh of sea fish, though bred in salt-water, is not salt. Hence I imagine, that if people at sea, distressed by thirst, when their fresh water is unfortunately spent, would make bathing-tubs of their empty water-casks, and, filling them with sea-water, sit in them an hour or two each day, they might be greatly relieved. Perhaps keeping their clothes constantly wet might have an almost equal effect; and this without danger of catching cold. Men do not catch cold by wet clothes at sea. Damp, but not wet linen, may possibly give colds; but no one catches cold by bathing, and no clothes can be wetter than water itself. Why damp clothes should then occasion colds, is a curious question, the discussion of which I reserve for a future letter, or some future conversation.

Adieu, my little philosopher. Present my respectful compliments to the good ladies your aunts, and to Miss Pitt; and believe me ever

Your affectionate friend,
And humble servant,
B. FRANKLIN.

be supported by little pieces of cork or wood. A man who can swim, may be aided in a long traverse by his handkerchief formed into a kite, by two cross sticks extending to the four corners; which, being raised in the air when the wind is fair and fresh, will tow him along while lying on his back. Where force is wanted to move a heavy body, and there are but few hands and no machines, a long and strong rope may make a powerful instrument. Suppose a boat is to be drawn up on a beach, that she may be out of the surf; a stake drove into the beach where you would have the boat drawn, and another to fasten the end of the rope to, which comes from the boat, and then applying what force you have to pull upon the middle of the rope at right angles with it, the power will be augmented in proportion to the length of rope between the posts. The rope being fastened to the stake A, and drawn upon in the direction C D, will slide over the stake B; and when the rope is bent to the angle A D B, represented by the pricked line in Plate VII. figure 24, the boat will be at B.

Some sailors may think the writer has given himself unnecessary trouble in pretending to advise them; for they have a little repugnance to the advice of landmen, whom they esteem ignorant and incapable of giving any worth notice; though it is certain that most of their instruments were the invention of landmen. At least the first vessel ever made to go on the water was certainly such. I will therefore add only a few words more, and they shall be addressed to passengers.

When you intend a long voyage, you may do well to keep your intention as much as possible a secret, or at least the time of your departure; otherwise you will be continually interrupted in your preparations by the visits of friends and acquaintance, who will not only rob you of the time you want, but put things out of your mind, so that when you come to sea, you have the mortification to recollect points of business that ought to have been done, accounts you intended to settle, and conveniences you had proposed to bring with you, &c., all which have been omitted through the effect of these officious friendly visits. Would it not be well if this custom could be changed; if the voyager after having without interruption made all his preparations, should use some of the time he has left, in going himself to take leave of his friends at their own houses, and let them come to congratulate him on his happy return.

It is not always in your power to make a choice in your captain, though much of your comfort in the passage may depend on his personal character, as you must for so long a time be confined to his company, and under his

direction; if he is a sensible, sociable, good-natured, obliging man, you will be so much the happier. Such there are; but if he happens to be otherwise, and is only skilful, careful, watchful, and active in the conduct of his ship, excuse the rest, for these are the essentials.

Whatever right you may have by agreement in the mass of stores laid in by him for the passengers, it is good to have some particular things in your own possession, so as to be always at your own command.

1. Good water, that of the ship being often bad. You can be sure of having it good only by bottling it from a clear spring or well and in clean bottles. 2. Good tea. 3. Coffee ground. 4. Chocolate. 5. Wine of the sort you particularly like, and cyder. 6. Raisins. 7. Almonds. 8. Sugar. 9. Capillaire. 10. Lemons. 11. Jamaica spirits. 12. Eggs greased. 13. Diet bread. 14. Portable soup. 15. Rusks. As to fowls, it is not worth while to have any called yours, unless you could have the feeding and managing of them according to your own judgment under your own eye. As they are generally treated at present in ships, they are for the most part sick, and their flesh tough and hard as whit-leather. All seamen have an opinion, broached I suppose at first prudently, for saving of water when short, that fowls do not know when they have drunk enough, and will kill themselves if you give them too much; so they are served with a little only once in two days. This is poured into troughs that lie sloping, and therefore immediately runs down to the lower end. There the fowls ride upon one another's backs to get at it, and some are not happy enough to reach and once dip their bills in it. Thus tantalised and tormented with thirst, they cannot digest their dry food; they fret, pine, sicken, and die. Some are found dead and thrown overboard every morning, and those killed for the table are not eatable. Their troughs should be in little divisions, like cups, to hold the water separately, figure 25. But this is never done. The sheep and hogs are therefore your best dependence for fresh meat at sea, the mutton being generally tolerable, and the pork excellent.

It is possible your captain may have provided so well in the general stores, as to render some of the particulars above recommended of little or no use to you. But there are frequently in the ship poorer passengers, who are taken at a lower price, lodge in the steerage, and have no claim to any of the cabin provisions, or to any but those kinds that are allowed the sailors. These people are sometimes dejected, sometimes sick; there may be women and children among them. In a situation where there is no going to market to purchase such

necessaries, a few of these your superfluities distributed occasionally, may be of great service, restore health, save life, make the miserable happy, and thereby afford you infinite pleasure.

The worst thing in ordinary merchant ships is the cookery. They have no professed cook, and the worst hand as a seaman is appointed to that office, in which he is not only very ignorant but very dirty. The sailors have therefore a saying, that *God sends meat and the devil cooks.* Passengers more piously disposed, and willing to believe heaven orders all things for the best, may suppose, that, knowing the sea-air and constant exercise by the motion of the vessel would give extraordinary appetites, bad cooks were kindly sent to prevent our eating too much; or that, foreseeing we should have bad cooks, good appetites were furnished to prevent our starving. If you cannot trust to these circumstances, a spirit-lamp, with a blaze-pan, may enable you to cook some little things for yourself; such as a hash, a soup, &c. And it might be well also to have among your stores some potted meats, which if well put up will keep long good. A small tin oven, to place with the open side before the fire, may be another good utensil, in which your own servant may roast for you a bit of pork or mutton. You will sometimes be induced to eat of the ship's salt beef, as it is often good. You will find cyder the best quencher of that thirst which salt meat or fish occasions. The ship biscuit is too hard for some sets of teeth. It may be softened by toasting. But rusk is better: for being made of good fermented bread, sliced and baked a second time, the pieces imbibe the water easily, soften immediately, digest more kindly, and are therefore more wholesome than the unfermented biscuit. By the way, rusk is the true original biscuit, so prepared to keep for sea, biscuit in French signifying twice baked. If your dry peas boil hard, a two-pound iron shot put with them into the pot, will by the motion of the ship grind them as fine as mustard.

The accidents I have seen at sea with large dishes of soup upon a table, from the motion of the ship, have made me wish that our potters or pewterers would make soup dishes in divisions, like a set of small bowls united together, each containing about sufficient for one person, in some such form as fig. 26; for then when the ship should make a sudden heel, the soup would not in a body flow over one side, and fall into people's laps and scald them, as is sometimes the case, but would be retained in the separate divisions, as in figure 27.

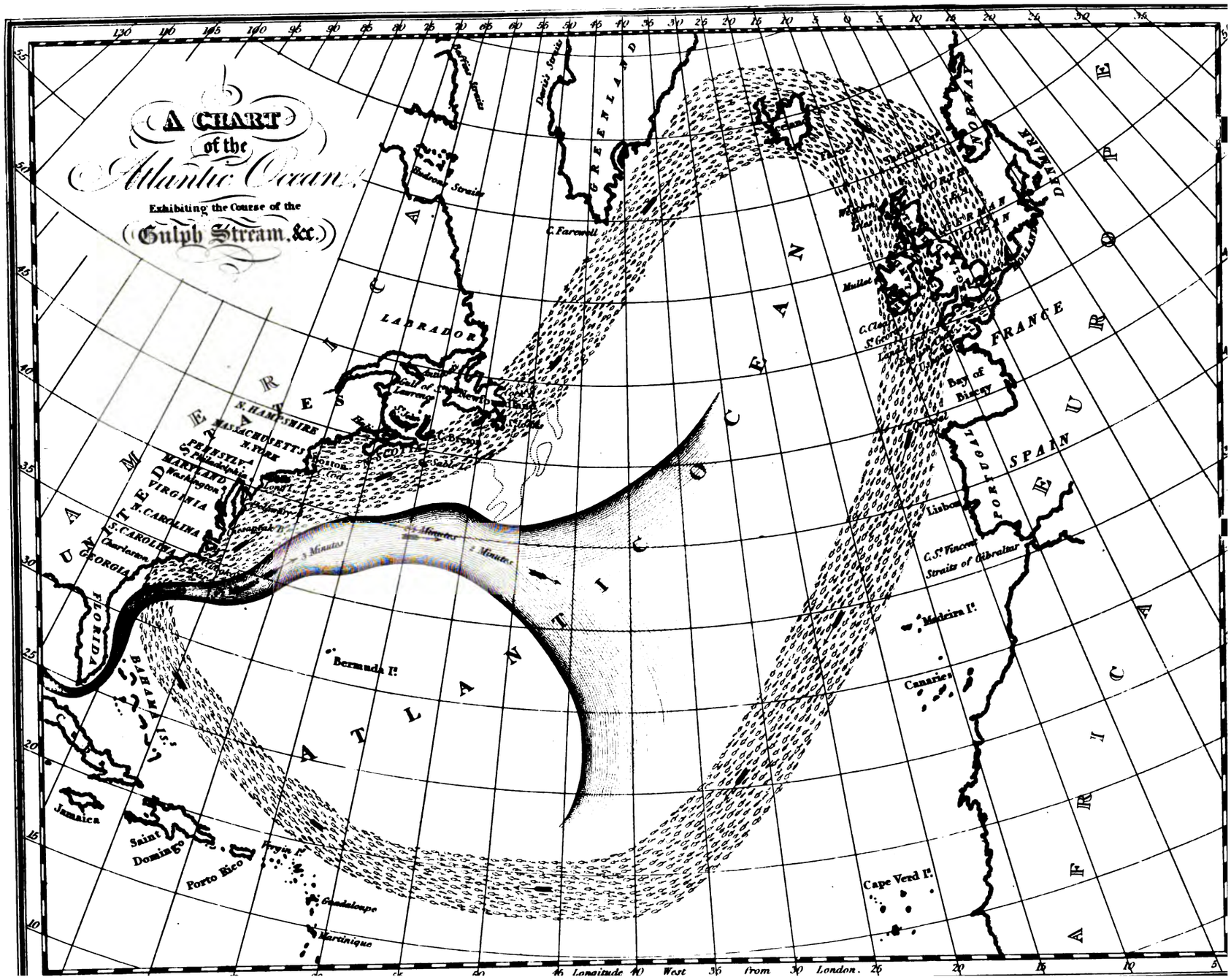
After these trifles, permit the addition of a few general reflections. Navigation, when employed in supplying necessary provision to a country in want, and thereby preventing famines, which were more frequent and destructive before the invention of that art, is undoubtedly a blessing to mankind. When employed merely in transporting superfluities, it is a question whether the advantage of the employment it affords is equal to the mischief of hazarding so many lives on the ocean. But when employed in pillaging merchants and transporting slaves, it is clearly the means of augmenting the mass of human misery. It is amazing to think of the ships and lives risked in fetching tea from China, coffee from Arabia, sugar and tobacco from America, all which our ancestors did well without. Sugar employs near one thousand ships, tobacco almost as many. For the utility of tobacco there is little to be said; and for that of sugar, how much more commendable would it be if we could give up the few minutes' gratification afforded once or twice a-day by the taste of sugar in our tea, rather than encourage the cruelties exercised in producing it! An eminent French moralist says, that when he considers the wars we excite in Africa to obtain slaves, the numbers necessarily slain in those wars, the many prisoners who perish at sea by sickness, bad provisions, foul air, &c. &c. in the transportation, and how many afterwards die from the hardships of slavery, he cannot look on a piece of sugar without conceiving it stained with spots of human blood! had he added the consideration of the wars we make to take and retake the sugar islands from one another, and the fleets and armies that perish in those expeditions, he might have seen his sugar not merely spotted, but thoroughly dyed scarlet in grain. It is these wars that make the maritime powers of Europe, the inhabitants of London and Paris, pay dearer for sugar than those of Vienna, a thousand miles from the sea; because their sugar costs not only the price they pay for it by the pound, but all they pay in taxes to maintain the fleets and armies that fight for it.[1]

With great esteem, I am, Sir, your most obedient humble servant,

B. FRANKLIN.

---

[1] See "*A Thought concerning the Sugar Islands,*" Part II. page 168. of this volume.


A CHART
of the
Atlantic Ocean.
Exhibiting the Course of the
Gulph Stream, &c.
Hudsons Straits
Davis's Straits
GREENLAND
Hudsons Straits
C. Farewell
LABRADOR
NORTH AMERICA
N. HAMPSHIRE
MASSACHUSETTS
N. YORK
PENSYLVA
MARYLAND
VIRGINIA
N. CAROLINA
S. CAROLINA
GEORGIA
FLORIDA
Charlestown
Savannah
Boston
Cod
Lond.
Bermuda I.
BAHAMA I.S
Jamaica
Saint Domingo
Porto Rico
Virgin I.s
Guadeloupe
Martinique
NORTH ATLANTIC OCEAN
Gulf of Florida
3 Minutes
2 Minutes
Mullet
Sheerness
Dover
Calais
Boulogne
Dieppe
Rouen
Havre
Cherbourg
Jersey
Guernsey
Scilly
Plymouth
Falmouth
Bristol
Bay of Biskey
FRANCE
PORTUGAL
SPAIN
Lisbon
C. St Vincent
Straits of Gibraltar
Madeira I.
Canaries
Cape Verd I.
AFRICA
Longitude West from London.

ON THE GULPH STREAM.

Remarks upon the Navigation from Newfoundland to New York, in order to avoid the Gulph Stream on one hand, and on the other the Shoals that lie to the southward of Nantucket and of St. George's Banks. [*See Plate.*]

After you have passed the banks of Newfoundland in about the 44th degree of latitude, you will meet with nothing till you draw near the Isle of Sables, which we commonly pass in latitude 43. Southward of this isle, the current is found to extend itself as far north as 41° 20′ or 30′, then it turns towards the E. S. E. or S. E. ¼ E.

Having passed the Isle of Sables, shape your course for the St. George's Banks, so as to pass them in about latitude 40°, because the current southward of those banks reaches as far north as 39°. The shoals of those banks lie in 41° 35′.

After having passed St. George's Banks, you must, to clear Nantucket, form your course so as to pass between the latitudes 38° 30′ and 40° 45′.

The most southern part of the shoals of Nantucket lie in about 40° 45′. The northern part of the current, directly to the south of Nantucket, is felt in about latitude 38° 30′.

By observing these directions and keeping between the stream and the shoals, the passage from the banks of Newfoundland to New York, Delaware, or Virginia, may be considerably shortened; for so you will have the advantage of the eddy current, which moves contrary to the Gulph Stream. Whereas if to avoid the shoals you keep too far to the southward, and get into that stream, you will be retarded by it at the rate of 60 or 70 miles a-day.

The Nantucket whale-men being extremely well acquainted with the Gulph Stream, its course, strength, and extent, by their constant practice of whaling on the edges of it, from their island quite down to the Bahamas, this draft of that stream was obtained from one of them, captain Folger, and caused to be engraved on the old chart in London, for the benefit of navigators, by

B. FRANKLIN.

Note. The Nantucket captains who are acquainted with this stream, make their voyages from England to Boston in as short a time generally as others take in going from Boston to England, viz. from twenty to thirty days.

A stranger may know when he is in the Gulph Stream, by the warmth of the water, which is much greater than that of the water on each side of it. If then he is bound to the westward, he should cross the stream to get out of it as soon as possible.

B. FRANKLIN.

OBSERVATIONS *of the Warmth of the* SEA-WATER, &c. *by Fahrenheit's Thermometer, in crossing the* GULPH STREAM; *with other Remarks made on board the Pennsylvania Packet, Captain Osborne, bound from London to Philadelphia, in April and May,* 1775.

Date.	Hour.	Temp. of Air.	Temp. of Wat.	Wind.	Course.	Distance.	Latitude N.	Longitude W.	Remarks.
April 10			62						
11			61						
12			64						
13			65						
14			65						
20		60	70	SSE			37° 99′	60° 98′	Much gulph weed; saw a whale.
27		60	70	SW	WbS		37 13	62 29	Color of water changed.
28	8 A.M.	70	64	SW	WNW		37 48	64 35	No gulph weed.
—	6 P.M.	67	60						Sounded, no bottom.
29	8 A.M.	63	71	N	W	34	37 26	66 0	Much light in the water last night.
—	5 P.M.	65	72	NE	WbS	44 57			Water again of the usual deep sea color, little or no light in it at night.
—	11 dit.	66	66	NWbN	WbN				
30	8 A.M.	64	70	NE	EbS	69	37 20	68 53	
—	12	62	70			24			Frequent gulph weed; water continues of sea color, little light.
—	6 P.M.	64	72	ESE	WbN	43			
—	10 dit.	65	65	S		25			Much light.
May 1	7 A.M.	68	63			60			Much light all last night.
—	12	65	56	SSW	WNW	44	38 13	72 23	Color of water changed.
—	4 P.M.	64	56		WbN	21			
—	10 dit.	64	57	SW	WNW	31			Much light.
2	8 A.M.	62	53			18	38 43	74 9	Much light. Thunder-gust.
—	12	60	53	WSW	NW	18			
—	6 P.M.	64	55	NW	WSW	15			
—	10	65	55	NbW	WbN	10			
3	7 A.M.	62	54			30	38 30	75 0	

OBSERVATIONS *of the* WARMTH *of the* SEA-WATER, *&c. by Fahrenheit's Thermometer; with other Remarks, made on board the Reprisal, Capt. Wycks, bound from Philadelphia to France, in October and November,* 1776.

Date.	Hour A. M.	Hour P. M.	Temp. of Air.	Temp. of Water.	Wind.	Course.	Distance.	Lat. N.	Long. W.	Remarks.
Oct. 31	10		76	70	S S E	E b S	135	38 12	70 30	Left the capes Thursday night, Oct. 29, 1776.
Nov. 1	10	4		71	W S W	E ½ N	109	No ob.	68 12	
2	8	4	71	71	N		141	ditto.	65 23	
2	12	4	71	78						
3	8	4	67	76	N W	E S E ½ E	160	37 0	62 7	Some sparks in the water these two last nights.
3	12			76		E b S				
4	9	4	70	76		N b E	194	36 26	58 8	Ditto.
4		1	68	76						
4		4		76						
4		8		78						
5	8		68	76		N E				Ditto.
5	12	4	70	75			163	35 21	55 3	
6	8	8		75	E b N	S 50 E	75	35 33	53 52	
6	12			76						
7	8			77	S E b E	N 30 W	108	36 6	52 46	
7	12	4		78						
8	9		75	77	S b E	N 49 E	175	38 2	50 1	
8	12	4		77						
9	9		75	77	S W	N 33 E	175	39 39	46 55	
9	12		75	70						

OBSERVATIONS MADE ON BOARD THE REPRISAL, CONTINUED.

Date.	Hour A.M.	Hour P.M.	Temp. of Air.	Temp. of Water.	Wind.	Course.	Distance.	Lat. N.	Long. W.	Remarks.
Novem. 9		4		71						
10	8		70	68						
—	12			64	E	N 17 E	64	40 39	46 27	
11	8			63						
—	12			61	SE	N 8 E	41	41 19	46 19	
12	8		56	59						
—		4		69	NNW	N 80 E	120	41 39	43 42	
13	all day			68	E	S 82 E	69	41 29	42 10	
14	8		70	70		N 74 E	111	42 0	39 57	
—		Noon		72	ESE					
—		4		71						
15	8		61	69						
—		Noon		68	WSW	N 70 E	186	43 3	35 51	
—		4		67						
16		Noon	65	67	SW	N 67 W	48	43 22	34 50	
—		4		63						
17	8			63	ESE	N 19 E	56	44 15	34 25	
18	all day			65	SbW	N 75 E	210	45 6	29 43	Some gulph weed.
19		Noon	65	64	SW	N 80 E	238	45 46	24 2	
20	8			62	N	S 80 E	155	45 19	20 30	
—		4		60						
21	9			62	S	N 88 E	94	45 22	18 17	
22	10		60	62	SSW	S 89 E	133	45 19	15 19	
23		Noon		61	WSW	S 86 E	194	45 6	10 35	
24		do.		60	NNE	N 78 E	191	45 46	6 10	
25		do.		60	NE	S 76 E	125	45 4	3 23	
26		do.	56	60	E	N 73 E	31	45 13	2 20	
27		do.		58						Soundings off Belliale.
28		do.	54	56						

A JOURNAL *of a* VOYAGE *from the Channel between France and England towards America.*

Dates.	Latit. N.	Long. W.	Therm. A. M. Air.	Therm. A. M. Water.	Therm. P. M. Air.	Therm. P. M. Water.	Winds.	Course.	Distance.	Variation of the Needle.
July 29			62	57						
30			62	58	63	58	These are taken on an average of 24 hours.			
31			60	58	62	62			Miles.	West.
August 1	49 15	4 15	63	62	60	64	East	S W ¼ W	60	22° 0
2	48 28	8 58	64	64	64	63	E S E	W b S ½ S	174	
3	47 0	12 13	60	67	omitted.		N E	S W b W	160	
4	45 0	15 45	66	66	do.	66	N W b W	S W ¼ W	190	
5	43 5	17 25	67	65	65	68	N E	S W b S	131	20 0
6	41 3	19 44	70	68	71	69	N E	S W ½ S	166	16 30
7	38 45	21 34	70	70	68	70	N E	S S W ¼ W	165	11 30
8	36 42	23 10	72	71	73	72	N E	S S W ¼ W	149	11 15
9	35 40	25 40	73	73	73	74	N E	W S W ½ S	137	
10	35 0	27 0	71	73	77	75	N W	W S W ½ S	76	
11	33 51	28 42	74	74	76	77	North	S W ¼ W	112	
12	33 30	31 30	76	75	76	76	North	W ½ S	143	
13	33 17	33 32	76	76	78	77	N E	W ½ S	103	
14	33 22	34 31	76	76	81	79	S S E	W ½ N	50	
15	33 45	35 0	78	79	79	78	W N W	S W ¼ W	35	
16	34 14	35 30	79	78	81	80	West	N W ¼ N	38	
17	35 37	36 4	80	79	80	78	W S W	N N W	75	
18	36 7	37 16	80	78	omitted.		N W b W	W N W ½ N	65	
19	36 38	38 0	78	77	76	77	W S W	N W ½ W	49	

Therm. Noon. A.	Therm. Noon. W.
77	78
81	79
79	79
81	80
80	78
80	79
79	77

JOURNAL OF A VOYAGE, &c. CONTINUED.

Dates.	Latit. N.	Long. W.	Therm. A. M.		Therm. P. M.		Winds.	Course.	Distance.	Variation of the Needle.	Therm. Noon.	
			Air.	Water.	Air.	Water.					A.	W.
August 20	37 38	38 6	78	76	omitted		West	N ¼ W	62		77	75
21	36 15	38 32	73	74	78	76	W N W	S b W	82		77	75
22	35 40	38 44	77	76	80	77	W b S	S S W	38		80	77
23	35 35	40 52	79	77	78	75	North	W ¼ S	100		omitted	
24	35 12	41 31	75	73	75	74	W N W	S W b W	41		75	74
25	35 40	42 33	79	76	79	76	W b N	W N W ¾ N	60		80	76
26	35 30	42 44	79	76	80	76	S W b W	S W ½ S	14		80	76
27	35 14	43 23	79	77	81	79	West	W S W ¼ S	38		81	78
28	34 23	44 0	78	76	78	78	N N E	S W b S	60		78	78
29	34 12	45 52	77	78	78	78	N E	W ¼ S	94	8 0	79	78
30	34 5	48 31	78	78	78	78	East	W ⅛ S	134		78	78
31	34 20	51 4	80	79	81	79	East	W ¾ S	129		80	80
Septem. 1	34 20	52 47	81	78	omitted		S S W	W ¼ N	86		83	80
2	34 55	55 12	81	80	83	80	S W	W b N ½ W	125		83	80
3	35 30	57 24	83	80	83	80	S W b S	W b N ⅛ N	114	6 0	84	81
4	35 50	59 1	82	80	83	80	S W ¼ W	W b N ¼ N	82		83	81
5	35 55	61 0	81	80	82	81	S S W	W ¼ N	96		82	81
6	36 20	62 30	80	81	79	80	N W b N	W b N	75		78	80
7	34 50	63 10	87	80	78	81	N W b N	S S W	86		78	81
8	34 45	64 40	75	79	75	79	North	W ¼ S	74		75	79
9	35 43	66 42	75	79	77	73	N E	W N W	108		78	80
10	37 20	68 40	77	73	77	70	E N E	N W	126		78	72

N. B. Longitude is reckoned from London, and the Thermometer is according to Fahrenheit.

OBSERVATIONS.

July 31. At one P. M. the Start bore WNW. distant six leagues.

August 1. The water appears luminous in the ship's wake.

— 2. The temperature of the water is taken at eight in the morning and at eight in the evening.

— 6. The water appears less luminous.

— 7. Formegas SW. dist. 32½ deg. St. Mary's SW¼S. 33 leagues.

— 8. From this date the temperature of the water is taken at eight in the morning and at six in the evening.

— 10. Moonlight, which prevents the luminous appearance of the water.

— 11. A strong southerly current.

— 12. Ditto. From this date the temperature of the air and water was taken at noon, as well as morning and evening.

— 16. Northerly current.

— 19. First saw gulph weed.

— 21. Southerly current.

— 22. Again saw gulph weed.

24. The water appeared luminous in a small degree before the moon rose.

— 29. No moon, yet very light in the water.

— 30. Much gulph weed to-day.

— 31. Ditto.

Sept. 1. Ditto.

— 2. A little more light in the water.

— 4. No gulph weed to-day. More light in the water.

— 5. Some gulph weed again.

— 6. Little light in the water. A very hard thunder-gust in the night.

— 7. Little gulph weed.

— 8. More light in the water. Little gulph weed.

- 9. Little gulph weed. Little light in the water last evening.

— 10. Saw some beds of rock-weed; and we were surprised to observe the water six degrees colder by the thermometer than the preceding noon.

This day (10th) the thermometer still kept descending, and at five in the morning of the 11th, it was in water as low as 70, when we struck soundings. The same evening the pilot came on board, and we found our ship about five

degrees of longitude a-head of the reckoning, which our captain accounted for by supposing our course to have been near the edge of the gulph stream, and thus an eddy-current always in our favor. By the distance we ran from Sept. 9, in the evening, till we struck soundings, we must have then been at the western edge of the gulph stream, and the change in the temperature of the water was probably owing to our suddenly passing from that current into the waters of our climate.

On the 14th of August the following experiment was made. The weather being perfectly calm, an empty bottle, corked very tight, was sent down 20 fathoms, and it was drawn up still empty. It was then sent down again 35 fathoms, when the weight of the water having forced in the cork, it was drawn up full; the water it contained was immediately tried by the thermometer, and found to be 70, which was six degrees colder than at the surface: the lead and bottle were visible, but not very distinctly so, at the depth of 12 fathoms; but when only 7 fathoms deep they were perfectly seen from the ship. This experiment was thus repeated Sept. 11, when we were in soundings of 18 fathoms. A keg was previously prepared with a valve at each end, one opening inward, the other outward; this was sent to the bottom in expectation that by the valves being both open when going down, and both shut when coming up, it would keep within it the water received at bottom. The upper valve performed its office well, but the under one did not shut quite close, so that much of the water was lost in hauling it up the ship's side. As the water in the keg's passage upwards could not enter at the top, it was concluded that what water remained in it was of that near the ground; and on trying this by the thermometer, it was found to be at 58, which was 12 degrees colder than at the surface.

This last journal was obligingly kept for me by Mr. J. Williams, my fellow-passenger in the London Packet, who made all the experiments with great exactness.

The chart here given has been constructed with a view to give a more comprehensive idea of the course of the Gulph Stream. Volney very plausibly suggests, that the earth deposited by the Gulph Stream S. E. of Newfoundland, has formed the great banks; and that the accumulation there has given the stream a new or more eastwardly direction. This chart also serves

to illustrate the long received ideas of the progress of the shoals of fish. May not the glutinous matter seen on the water, and which all persons who have been across the line must have noticed, be another cause of the phenomena of fish shoals? May they not come in search of the food, which the matter seen on the water in such abundance affords? The writer of this note has observed, that on entering the trade winds, the seamen have judged of the change of wind approaching by the direction of the bonetta and other fish, which pass in shoals in the South Atlantic and South-eastern Seas, in a direction opposite to the wind; and when not opposite to the prevailing wind, they conclude a change to be at hand from the direction towards which the fish go. The appearance of luminous floating matter at night is often followed by shoals of fish; the spawn or gluten which the writer has had taken up in a bucket, has been often found as large as two inches diameter, and frequently induced an opinion that it was a species of maritime *cocon* or egg of an animal; fragments of irregular shaped gluten have been also often seen. An inquiry into the periodical appearance of these luminous substances on voyages to the southward, and remarks on the usual direction of the shoals of bonetta and other fish, might perhaps lead to very interesting discoveries; it might be assumed as a question worthy of examination, whether the direction of shoals of fish is not towards those points from which periodical winds or currents move the waters; and if the shoals of fish which move from the north poles, and by the British isles across the Atlantic, are not led by their instincts in search of these periodical supplies of food; and if the deposits made by the Gulph Stream on the banks of Newfoundland is not the true cause of the great abundance of fish found there. (*Note by an American Gentleman.*)

ON THE PERNICIOUS QUALITY OF LEAD.—COLICA PICTORUM FROM RAIN-WATER, &c.

To B. Vaughan, Esq.

Dear Friend, *Philadelphia, July* 31, 1786.

I recollect that when I had the great pleasure of seeing you at Southampton, now a twelvemonth since, we had some conversation on the bad effects of lead taken inwardly, and that at your request I promised to send you

in writing, a particular account of several facts I then mentioned to you, of which you thought some good use might be made. I now sit down to fulfil that promise.

The first thing I remember of this kind was a general discourse in Boston when I was a boy, of a complaint from North Carolina against New England rum, that it poisoned their people, giving them the dry belly-ache, with a loss of the use of their limbs. The distilleries being examined on the occasion, it was found that several of them used leaden still heads and worms, and the physicians were of opinion that the mischief was occasioned by that use of lead. The legislature of the Massachusetts thereupon passed an act, prohibiting under severe penalties the use of such still heads and worms thereafter. Enclosed I send you a copy of the act, taken from my printed law book.

In 1724, being in London, I went to work in the printing-house of Mr. Palmer, Bartholomew Close, as a compositor. I there found a practice I had never seen before, of drying cases of types (which are wet in distribution) by placing it sloping before the fire. I found this had the additional advantage when the types were not only dried but heated, of being comfortable to the hands working over them in cold weather. I therefore sometimes heated my case when the types did not want drying. But an old workman observing it, advised me not to do so, telling me, I might lose the use of my hands by it, as two of our companions had nearly done; one of whom, that used to earn his guinea a week, could not then make more than ten shillings; and the other, who had the dangles, but seven and sixpence. This, with a kind of obscure pain that I had sometimes felt, as it were in the bones of my hand, when working over the types made very hot, induced me to omit the practice. But talking afterwards with Mr. James, a letter-founder in the same close, and asking him if his people, who worked over the little furnaces of melted metal, were not subject to that disorder; he made light of any danger from the effluvia, but ascribed it to particles of the metal swallowed with their food by slovenly workmen, who went to their meals after handling the metal, without well washing their fingers, so that some of the metalline particles were taken off by their bread and eaten with it. This appeared to have some reason in it. But the pain I had experienced made me still afraid of those effluvia.

Being in Derbyshire at some of the furnaces for smelting of lead ore, I was told that the smoke of those furnaces was pernicious to the neighboring grass and other vegetables. But I do not recollect to have heard any thing of the

effect of such vegetables eaten by animals. It may be well to make the inquiry.

In America, I have often observed that on the roofs of our shingled houses where moss is apt to grow in northern exposures, if there be any thing on the roof painted with white lead, such as balusters, or frames of dormant windows, &c. there is constantly a streak on the shingles from such paint down to the eaves, on which no moss will grow, but the wood remains constantly free from it. We seldom drink rain-water that falls on our houses; and if we did, perhaps the small quantity of lead descending from such paint, might not be sufficient to produce any sensible ill effect on our bodies. But I have been told of a case in Europe, I forget the place, where a whole family was afflicted with what we call the dry belly-ache, or *colica pictorum*, by drinking rain-water. It was at a country seat, which being situated too high to have the advantage of a well, was supplied with water from a tank, which received the water from the leaded roofs. This had been drank several years without mischief; but some young trees planted near the house, growing up above the roof, and shedding their leaves upon it, it was supposed an acid in those leaves had corroded the lead they covered, and furnished the water of that year with its baneful particles and qualities.

When I was in Paris with Sir John Pringle in 1767, he visited *La Charité*, a hospital particularly famous for the cure of that malady, and brought from thence a pamphlet containing a list of the names of persons specifying their professions or trades, who had been cured there. I had the curiosity to examine that list, and found that all the patients were of trades that some way or other use or work in lead; such as plumbers, glaziers, painters, &c. excepting only two kinds, stone-cutters, and soldiers. These I could not reconcile to my notion, that lead was the cause of that disorder. But on my mentioning this difficulty to a physician of that hospital, he informed me that the stone-cutters are continually using melted lead to fix the ends of iron ballustrades in stone; and that the soldiers had been employed by painters as laborers in grinding of colors.

This, my dear friend, is all I can at present recollect on the subject. You will see by it, that the opinion of this mischievous effect from lead, is at least above sixty years old; and you will observe with concern how long an useful truth may be known, and exist, before it is generally received and practised on.

I am ever, yours most affectionately, B. FRANKLIN.

ON THERMOMETERS.

Sept. 13, 1786.

The two thermometers most generally in use at present among the philosophers of Europe, are those of Reaumur and Fahrenheit. The French use Reaumur's, the English Fahrenheit's.

In their respective graduations, Reaumur marked his freezing point 0, Fahrenheit fixed his at 32 of his degrees above 0, and two of his degrees are just equal to one of Reaumur's. I know that in some instruments this equality is not exact; but in two which I have, the one Reaumur's made by Cappy in Paris, the other Fahrenheit's by Nairne, London; it is precisely so, they hanging together in the same room. And those workmen are famed for their exactness.

In reading, one frequently finds degrees of heat and cold mentioned, as measured by one or the other of those thermometers, and one is at a loss to reduce that least known to the other.

Rule.

Suppose the degree mentioned is 25 of Reaumur, which is 25 degrees above 0, or his freezing point, and you would know to what degree of Fahrenheit that answers.

Double the 25, which will give you 50 of Fahrenheit's, and to them add 32, his number at the freezing point, and you will have 82, the degree of Fahrenheit's equal to 25 of Reaumur.

On the contrary, if you would reduce Fahrenheit to Reaumur, first subtract 32, and then take half of the remainder; thus taking 32 from 82, there remains 50, and the half of 50 is 25.

This answers in all cases where the degree is above the freezing point.

If below, double the degrees of Reaumur, and subtract them from the 32 of Fahrenheit, which will give you the equivalent degree of his scale. Thus suppose it 5 below 0, or the freezing point of Reaumur; twice five is 10, which deducted from 32, Fahrenheit's freezing point, gives you 22 as the equivalent degree of his thermometer.

And halving the degrees of Fahrenheit that are less than 32, you have the degree of Reaumur. Thus 22 of Fahrenheit being 10 degrees less than 32, the half of 10 is 5, the equivalent degree of Reaumur.

B. Franklin.

ON BALLOONS—PIGEONS KILLED BY LIGHTNING.

To M. Le Roy.

My dear old Friend, *Philadelphia, April* 18, 1787.

I believe I have not written to you since I received your kind letters of July 26, and October 9, 1786. Such has been my continual occupation in public and private business, having the building of three houses upon my hands, that I had no time left for philosophical correspondence. I now take up my pen with the honest resolution of paying off some of my debts.

You mention that M. De Buffon *avoit des douleurs semblable aux miens.* I sympathise with him. Let me know in your next how he does. I do not understand these dispensations of Providence, though probably they are for the best. But it seems to me, that if you or I had the disposition of good and evil in this world, so excellent a man would not have an hour's pain during his existence.

Your account of the progress made in the art of ballooning, by the acquisition of a tight *envelope*, and the means of descending and rising without throwing out ballast, or letting out air, is very pleasing. I am sorry the artists at *Javelle* do not continue their experiments. I always thought they were in the likeliest way of making improvements, as they were remote from interruption in their experiments. I have sometimes wished I had brought with me from France, a balloon sufficiently large to raise me from the ground. In my malady it would have been the most easy carriage for me, being led by a string held by a man walking on the ground. I should be glad to have Mr. Meunier's work. Pray let Mr. Grand know where he may buy it for me.

It gives me pleasure to hear of the success attending the conductors at Brest and at Dijon. Time will bring them more into use, and of course make them more useful.

It is a curious fact, that of the death of so many pigeons by lightning without disturbing their position. Pray when you see M. De Malesherbes, present to him my respects. He is one of the most respectable characters of this age.

Believe me ever, my dear friend, with the sincerest esteem and respect, yours most affectionately, B. Franklin.

ON THE UTILITY OF LIGHTNING CONDUCTORS.

To M. LANDRIANI.

SIR, *Philadelphia, Oct.* 14, 1787.

I received by the hand of Mr. Gibbs your excellent dissertation, *dell' utilita dei conduttori elettrici*, which you have had the goodness to send me. I have read it with great pleasure. Be pleased to accept my hearty thanks.

I find upon my return to this country, that the number of conductors is greatly increased; their utility having been made manifest by many instances of their good effect in preserving buildings. Among others, my own house in my absence received a great stroke, which was visible to the neighbors, who immediately ran in to see if any damage was done, or any fire commenced, which might by their assistance be extinguished. They found nothing disordered, and the family only much frightened by the loudness of the explosion. On making an addition to my house last year, the conductor was taken down to be removed, when I found that the copper point which had been nine inches long, and in its thickest part about one-third of an inch in diameter, had been almost all melted and blown away, very little of it remaining attached to the iron rod. So that at length the invention has been of some use to the inventor, and afforded an additional pleasure to that of having seen it useful to others. Mr. Rittenhause, our astronomer, informs me, that having inspected with his excellent telescope many conductors that are within his view, he finds that the points of a number of them have also been melted; and we have no instance of any considerable damage done to any houses that were furnished with a complete conductor, and very few of damage to any other houses in this city since conductors became common.

With great esteem and respect, I have the honor to be, sir, your most obedient and most humble servant, B. FRANKLIN.

ON THE EARTH'S MAGNETISM, &c.

To THE HON. J. BOWDOIN, ESQ.

DEAR SIR, *Philadelphia, May* 31, 1788.

* * * * * *

Our ancient correspondence used to have something philosophical in it. As

you are now more free from public cares, and I expect to be so in a few months, why may we not resume that kind of correspondence. Our much regretted friend Winthrop once made me the compliment, that I was good at starting game for philosophers. Let me try if I can start a little for you.

Has the question, How came the earth by its magnetism, ever been considered?

Is it likely that *iron ore* immediately existed when this globe was first formed, or may it not rather be supposed a gradual production of time?

If the earth is at present magnetical in virtue of the masses of iron ore contained in it, might not some ages pass before it had magnetic polarity?

Since iron ore may exist without the polarity, and by being placed in certain circumstances, may obtain it from an external cause; is it not possible that the earth received its magnetism from some such cause?

In short, may not a magnetic power exist throughout our system, perhaps through all systems, so that if men could make a voyage in the starry regions, a compass might be of use? And may not such universal magnetism with its uniform direction, be serviceable in keeping the diurnal revolution of a planet more steady to the same axis?

Lastly, as the poles of magnets may be changed by the presence of stronger magnets, might not in ancient times the near passing of some large comet of greater magnetic power than this globe of ours, have been a means of changing its poles, and thereby wracking and deranging its surface, placing in different regions the effect of centrifugal force, so as to raise the waters of the sea in some, while they were depressed in others?

Let me add another question or two, not relating indeed to magnetism, but however, to the theory of the earth.

Is not the finding of great quantities of shells and bones of animals (natural to hot climates) in the cold ones of our present world, some proof that its poles have been changed?

Is not the supposition that the poles have been changed, the easiest way of accounting for the deluge, by getting rid of the old difficulty how to dispose of its waters after it was over? since if the poles were again to be changed, and placed in the present equator, the sea would fall there about 15 miles in height, and rise as much in the present polar regions: and the effect would be proportionable if the new poles were placed anywhere between the present and the equator.

Does not the apparent wrack of the surface of this globe, thrown up into long ridges of mountains with strata in various positions, make it probable, that its internal mass is a fluid, but a fluid so dense as to float the heaviest of our substances? Do we know the limit of condensation air is capable of? Supposing it to grow denser *within* the surface, in the same proportion nearly as we find it does *without*, at what depth may it be equal in density with gold?

Can we easily conceive how the strata of the earth could have been so deranged, if it had not been a mere shell supported by a heavier fluid? Would not such a supposed internal fluid globe be immediately sensible of a change in the situation of the earth's axis, alter its form, and thereby burst the shell, and throw up parts of it above the rest; as if we could alter the position of the fluid contained in the shell of an egg, and place its longest diameter where the shortest now is, the shell must break; but would be much harder to break if the whole internal substance were as solid and hard as the shell?

Might not a wave by any means raised in this supposed internal ocean of extremely dense fluid, raise in some degree as it passes the present shell of incumbent earth, and break it in some places, as in earthquakes? And may not the progress of such wave, and the disorders it occasions among the solids of the shell, account for the rumbling sound being first heard at a distance, augmenting as it approaches, and gradually dying away as it proceeds? a circumstance observed by the inhabitants of South America in their last great earthquake, that noise coming from a place some degrees north of Lima, and being traced by inquiry quite down to Buenos Ayres, proceeding regularly from north to south, at the rate of leagues per minute, as I was informed by a very ingenious Peruvian whom I met with at Paris.

I am ever, my very dear friend, yours most affectionately,

B. FRANKLIN.

DESCRIPTION OF THE PROCESS TO BE OBSERVED IN MAKING LARGE SHEETS OF PAPER IN THE CHINESE MANNER, WITH ONE SMOOTH SURFACE.

IN Europe to have a large surface of paper connected together and smooth on one side, the following operations are performed.

Communicated by Dr. Franklin to the American Philosophical Society, in which it was read, June 20, 1788.

1. A number of small sheets are to be made separately.

2. These are to be couched, one by one, between blankets.

3. When a heap is formed it must be put under a strong press, to force out the water.

4. Then the blankets are to be taken away, one by one, and the sheets hung up to dry.

5. When dry they are to be again pressed, or if to be sized, they must be dipped into size made of warm water, in which glue and alum are dissolved.

6. They must then be pressed again to force out the superfluous size.

7. They must then be hung up a second time to dry, which, if the air happens to be damp, requires some days.

8. They must then be taken down, laid together, and again pressed.

9. They must be pasted together at their edges.

10. The whole must be glazed by labor, with a flint.

In China, if they would make sheets, suppose of four and a half ells long and one and a half ells wide, they have two large vats, each five ells long and two ells wide, made of brick, lined with a plaster that holds water. In these the stuff is mixed ready to work.

Between these vats is built a kiln or stove, with two inclining sides: each side something larger than the sheet of paper; they are covered with a fine stucco that takes a polish, and are so contrived as to be well heated by a small fire circulating in the walls.

The mould is made with thin but deep sides, that it may be both light and stiff: it is suspended at each end with cords that pass over pullies fastened to the ceiling, their ends connected with a counterpoise nearly equal the weight of the mould.

Two men, one at each end of the mould, lifting it out of the water by the help of the counterpoise, turn it and apply it with the stuff to the smooth surface of the stove, against which they press it, to force out great part of the water through the wires. The heat of the wall soon evaporates the rest, and a boy takes off the dried sheet by rolling it up. The side next the stove receives the even polish of the stucco, and is thereby better fitted to receive the impression of fine prints. If a degree of sizing is required, a decoction of rice is mixed with the stuff in the vat.

Thus the great sheet is obtained, smooth and sized, and a number of the European operations saved.

As the stove has two polished sides, and there are two vats, the same operation is at the same time performed by two other men at the other vat; and one fire serves.

NEW AND CURIOUS THEORY OF LIGHT AND HEAT.

Addressed to David Rittenhause, Esq.

Nov. 20, 1788.

Universal space, as far as we know of it, seems to be filled with a subtle fluid, whose motion, or vibration, is called light.

This fluid may possibly be the same with that which, being attracted by, and entering into other more solid matter, dilates the substance by separating the constituent particles, and so rendering some solids fluid, and maintaining the fluidity of others; of which fluid, when our bodies are totally deprived, they are said to be frozen; when they have a proper quantity, they are in health, and fit to perform all their functions; it is then called natural heat: when too much, it is called fever; and when forced into the body in too great a quantity from without, it gives pain, by separating and destroying the flesh, and is then called burning, and the fluid so entering and acting is called fire.

While organised bodies, animal or vegetable, are augmenting in growth, or are supplying their continual waste, is not this done by attracting and consolidating this fluid called fire, so as to form of it a part of their substance? And is it not a separation of the parts of such substance which, dissolving its solid state, sets that subtle fluid at liberty, when it again makes its appearance as fire?

For the power of man relative to matter, seems limited to the separating or mixing the various kinds of it, or changing its form and appearance by different compositions of it; but does not extend to the making or creating new matter, or annihilating the old. Thus, if fire be an original element or kind of matter, its quantity is fixed and permanent in the universe. We cannot destroy any part of it, or make addition to it; we can only separate it from that which confines it, and so set it at liberty; as when we put wood in a situation to be burnt, or transfer it from one solid to another, as when we make lime by burning stone, a part of the fire dislodged in the fuel being left in the stone. May not this fluid, when at liberty, be capable of penetrating and entering into all bodies,

organised or not, quitting easily in totality those not organised, and quitting easily in part those which are; the part assumed and fixed remaining till the body is dissolved?

Is it not this fluid which keeps asunder the particles of air, permitting them to approach, or separating them more, in proportion as its quantity is diminished or augmented?

Is it not the greater gravity of the particles of air, which forces the particles of this fluid to mount with the matters to which it is attached, as smoke or vapor?

Does it not seem to have a greater affinity with water, since it will quit a solid to unite with that fluid, and go off with it in vapor, leaving the solid cold to the touch, and the degree measurable by the thermometer?

The vapor rises attached to this fluid, but at a certain height they separate, and the vapor descends in rain, retaining but little of it, in snow or hail less. What becomes of that fluid? Does it rise above our atmosphere, and mix with the universal mass of the same kind?

Or does a spherical stratum of it, denser, as less mixed with air, attracted by this globe, and repelled or pushed up only to a certain height from its surface, by the greater weight of air, remain there surrounding the globe, and proceeding with it round the sun?

In such case, as there may be a continuity or communication of this fluid through the air quite down to the earth, is it not by the vibrations given to it by the sun, that light appears to us? And may it not be, that every one of the infinitely small vibrations, striking common matter with a certain force, enters its substance, is held there by attraction, and augmented by succeeding vibrations, till the matter has received as much as their force can drive into it?

Is it not thus, that the surface of this globe is continually heated by such repeated vibrations in the day, and cooled by the escape of the heat when those vibrations are discontinued in the night, or intercepted and reflected by clouds?

Is it not thus, that fire is amassed and makes the greatest part of the substance of combustible bodies?

Perhaps, when this globe was first formed, and its original particles took their place at certain distances from the centre, in proportion to their greater or less gravity, the fluid fire, attracted towards that centre, might in great part be obliged, as lightest, to take place above the rest, and thus form the sphere of fire above supposed, which would afterwards be continually diminishing by the

substance it afforded to organised bodies, and the quantity restored to it again, by the burning or other separating of the parts of those bodies.

Is not the natural heat of animals thus produced, by separating in digestion the parts of food, and setting their fire at liberty?

Is it not this sphere of fire which kindles the wandering globes that sometimes pass through it in our course round the sun, have their surface kindled by it, and burst when their included air is greatly rarefied by the heat on their burning surfaces?

May it not have been from such considerations that the ancient philosophers supposed a sphere of fire to exist above the air of our atmosphere?

B. FRANKLIN.

THE END.

INDEX

TO THE SELECT WRITINGS.

Account of a Toad found in the solid of a Stone Quarry, 449.
Account of a species of Moth that lived 71 days after its head was cut off, 451.
Account of a Three-Wheeled Clock, 475.
Advantages of Stoves that draw downwards, 512.
Advice to a young Tradesman, 245.
Advice to those who are about to undertake a Sea Voyage, 255.
Air, an Essay on the free Use of, 374.—Moist Air not unhealthy, 422.
Albany Papers, 1.
America, the internal State of, 267.
America, Information to those who would remove to, 259.
America, Comparison of her Credit and that of Great Britain, 92.
American Discontents before 1768, Causes of, 43.
American Paper-Money, Remarks relative thereto, 33.—State of, 98.
American Politics prior to the Independence of the United States, 1776, 1.
Do. subsequent to 1776, 1.
Analogy between Magnetism and Electricity, 400.
Animals, Effect of Lightning on the Eyes of, 459.
Animal Food rendered tender by Electricity, 405.
Answer to Mons. Dubourg's Queries respecting the Armonica, 359.
Answers to Queries on the Art of Swimming, 407.
Apologue, 309.
Arabian Tale, 326.
Armonica, a musical Instrument. Description of it, 354.—Answer to Mons. Dubourg's Questions relative to the Armonica, 359.
Articles of Belief and Acts of Religion, 187.
Astronomical Conjectures, 370.
Attempt to explain the Effects of Lightning on the Vane of the Steeple of a Church in Cremona, 433.
Aurora Borealis, Suppositions and Conjectures relative thereto, 440.

Bagatelles, 307.—To the Abbé Morellet, 349.
Balloons, their probable importance, 464. 555.
Beccaria, Letter to him on the Armonica, 354.
Belief, Articles of, and Acts of Religion, 187.

Bodies, Gravitation of Bodies affected by the Sun and Moon, 475.
Boroughs in England, Elective Franchises enjoyed by the small, 180.
Bowdoin, a new Method of warming Rooms, addressed to Mr. James, 499.
Brotherly Love, a Parable, 199.
Busy-Body, No. 1, 200.—No. 2, 202.—No. 3, 203.—No. 4, 207.—No. 5, 211.—No. 8, 217.

Catechism relative to the National Debt of Great Britain, 97.
Causes of American Discontents before 1768, 43.
Celsus, Remarks on some Quotations from, 418.
Chimnies, a Philosophical Treatise on, 368.—Causes of Smoky Chimnies, 479.
Chess, the Morals of, 322.
China, Provisions made to prevent Famine in, 143.
Clock, an account of a Three-Wheeled Clock, 475.
Coin, Reflections thereon, 163.
Cold, Hints for preventing Catching Cold, 411.—Causes of Colds, 420.
Colonies, Plan of a proposed Union of the several, 4.—Number of Members returned for each, 7.—State of the Constitution, 59.
Congress, Vindication and Offer from Congress to Parliament in 1775, 84.
Constitution, State of the Constitution of the Colonies by Governor Pownall, 59.
Conte, sur M. Montresor, 325.—Translation of the same, 326.
Corn, Observations on the Price thereof, 123.
Countries distant and unimproved, Plan for benefiting, 136.
Credit of Great Britain and America compared, 92.
Criminal Laws, Remarks on the, 175.

Dalrymple and Franklin's Plan for benefiting distant unprovided Countries, 136.
Dead Bodies, Essay on their long Retention of Infection, 445.
Death occasioned by Lightning, account of, 403.
Debt of England, Catechism relative thereto, 97.
Description of a Stove for burning Pit-Coal and consuming all its Smoke, 505.
Dialogue between Britain, France, Spain, Holland, Saxony, and America, 89.
between Philocles and Horatio, 221.—Second Dialogue between Philocles and Horatio, 225.
between Franklin and the Gout, 327.
Discoveries, Remarks thereon, 239.
Distilleries, pernicious effects of Lead in the same, 367.
Dreams, the Art of procuring pleasant, 312.
Drinking Songs, a Dissertation on, 347.
Dubourg, Answer to his Queries respecting the Armonica, 359.—On the free Use of Air, to the same, 374.

Earth, the Abbé Soulavie's Notes on the Theory thereof, 455.—On the Magnetism of the Earth, 556.

Economical Project, addressed to the Editors of the Journal of Paris, 350.

Education, a Petition to those who have the Superintendency of, 319.

Electricity of Fogs, account thereof, 364.—Conjectures on Electricity, 370.—Analogy between Magnetism and Electricity, 400.—Meat rendered tender by Electricity, 405.—Queries on Electricity by Dr. Ingenhausz, and Franklin's Answers, 451.—Electrical Experiments, 457.—Electrical Bottle and the Density of Glass, 458.—Patent Electrical Machine, 459.—Further Electrical Experiments, 475.

Elephants natives of America, Conjectures relative thereto, 366.

Emigration, Remarks on an Act of the British Parliament to discourage Emigration, 77.

English School, Sketch of an English School submitted to the consideration of the Trustees of the Philadelphia Academy, 278.

Ephemera, an Emblem of Human Life, 316.

Epitaph on Miss Shipley's Squirrel Mungo, 311.

Essays on various Subjects, 200.

Do. on Philosophical Subjects, 355.

Experiments on the Utility of long-pointed Rods for securing Buildings from Lightning, 391.

Fahrenheit's Thermometer explained with respect to its difference from Reaumur's, 554.

Famine in China, mode of preventing, 148.

Felons, Letter to the Pennsylvania Gazette on Great Britain sending them to America, 83.

Fire, Observation and Conjectures on the Nature of, 359, 361, 466.

Fogs, Treatise on the Electricity of, 364.

Franklin's Answer to Strahan's Queries, 51.—Remarks on Governor Pownall's State of the Constitution of the Colonies, 59.—Preface to the Votes and Proceedings of the Freeholders of Boston, 66.—Rules for reducing a great Empire to a small one, 69.—Letter to the Public Advertiser on the Act to discourage Emigration, 77. Letter to the Pennsylvania Gazette, on sending Felons to America, 82.—Dialogue between Britain, France, Spain, Holland, &c. 89.—Observations on the Increase of Mankind, peopling Countries, &c. 110.—Observations on the Price of Corn and of the Management of the Poor, 123.—On Smuggling, 129.—Observations on War, 131.—On the laboring Poor, 133.—Plan for benefiting distant unprovided Countries, 136.—On the Institution in Holland to prevent Poverty, 139.—Positions to be examined, 140.—Note respecting Trade and Manufactures, 143.—Notions concerning Trade and Merchants, 143.—Principles of Trade, 145.—Reflections on Coin, 163.—Thoughts concerning the Sugar Islands, 168.—Opinion on the Right of Impressing Seamen, 169.—Remarks on the Criminal Laws, and on the practice of Privateering, 175.—On the Elective Franchises enjoyed by small Boroughs in England, 180.—Answer to the Abbé Morellet relative to the Militia, 184.—Project for preventing Wars, 185.—Some good Whig Principles, 185.—Articles of Belief and Acts of Religion, 187.—Parable against Persecution, in

Scripture language, 193.—On Persecution in former ages—of Dissenters—State of Toleration, 194.—A Parable on Brotherly Love, 199.—Writes under the signature of the Busy-Body, 200.—Dialogue between Philocles and Horatio, 221.—Second Dialogue, 225.—Public men, Remarks on, 229.—Self-denial not the Essence of Virtue, 233.—On the Usefulness of the Mathematics, 235.—On true Happiness, 238.—On general Discoveries, 239.—On the Waste of Life, 242.—Advice to a young Tradesman, 245.—Hints to those who would be rich, 246.—The way to make money plenty, 247.—Way to Wealth, 248.—Thoughts concerning the Medals to be struck by order of Congress, 254.—Precautions to those who are about to undertake a Sea Voyage, 255.—Information to those who would remove to America, 259.—The internal State of America in 1784, 267.—Remarks on the Savages in North America, 271.—Observations on Indian Corn, 276.—Sketch of an English School, 278.—Observations relative to the Intention of the Founders of the Phliadelphia Academy, 283.—Account of the Supreme Court of Judicature in Pennsylvania, 303.—The Levée, 307.—Apologue, 309.—Epitaph on Miss Shipley's Squirrel, 311.—Art of producing pleasant Dreams, 312.—Ephemera, an emblem of Human Life, 316.—The Whistle, 317.—Petition to those who have the Superintendence of Education, 319.—Handsome and deformed Leg, 321.—Morals of Chess, 322.—Conte, 325.—An Arabian Tale, 326.—Dialogue between Franklin and the Gout, 327.—Letter to Madame Helvetius, 332, 333.—Petition presented to Madame Helvetius by her Cats, 341.—Bagatelle to the Abbé de la Roche, 345.—To the Abbé Morellet, 347.—An Economical Project, 350.—Account of the Armonica, 355.—Answer to some Queries respecting the Armonica, 359.—Remarks on Fire, 359.—Electricity of Fogs, 364.—Conjectures respecting the Elephant, 366.—On the Colica Pictorum, 367.—On Chimnies, 368.—On Astronomical and Electrical Subjects, 370.—On the free use of Air, 374.—Treatise on Ventilation, 375.—Observations on Rain, 387.—Observation on the Spots in the Sun, 399.—On the Choice of Glass for the Leyden Experiment, 402.—On Death from Lightning, 403.—On rendering Meat tender by Electricity, 405.—Nature of Sea Coal, 407.—On Swimming, 407.—Stoves for Public Buildings, 409.—On catching Cold, 411.—On the Causes of Colds, 420.—Moist Air not unhealthy, 422.—Toads, some account of, 449.—Answer to Ingenhausz's Queries, 451.—On the Theory of the Earth, 455.—Experiments in Electricity, 458.—Remarks on Mr. Nairn's Patent Electrical Machine, 459.—Improvements suggested in the Hygrometer, 459.—On the Comet seen in Yorkshire in 1783, 464.—On Balloons, 464.—Gravitation of Bodies affected by the Sun and Moon, 475.—Attempt to explain the Effects of Lightning, 433.—Aurora Borealis, 440.—On the Retention of Infection in Dead Bodies, 445.—On Heat Conductors, 447.—On Warming Rooms, addressed to James Bowdoin, 449.—Invents a new Stove to consume its own Smoke, 505.—Also another Stove to draw downwards, 506.—Improvements in Navigation, addressed to Mons. Le Roy, 518.

Glass for the Leyden Experiment, on the Choice of, 402.
Glass, the Density of, 458.
Gout, a Dialogue between Franklin and the, 327.
Gravitation of Bodies affected by the Sun and Moon, 475.
Great Britain, a Comparison of the State of the Credit of America and of, 92.
Gulph Stream, Observations on the, 542.

Happiness, an Essay on true, 238.
Heat, on the Conductors of, 447.
Helvetius, Letters to Madame, 332, 333, 334, 335.—The Cat's Petition to, 340.
Hints to those who would be rich, 247.
Hints to prevent catching Cold, 411.
Horatio and Philocles, a Dialogue between, 221.—A Second Dialogue between, 225.
Hygrometer, curious Discovery relative to the, 459.

Impressing Seamen, Franklin's opinion on the right of, 169.
Improvements in Navigation, 518.
Increase of Mankind, observations thereon, 110.
Indian Corn, observations on, 277.
Infection in dead bodies, Cause of the long retention of, 445.
Information to those who would remove to America, 259.
Ingenhausz, Dr., Project for preventing War, in a letter to, 185.
———— Electrical Queries, with Franklin's Answers, 451.

Jackson's Observations on Franklin's Remarks on the increase of Mankind, 115.
Job, Parody on the first chapter of the book of, 309.

La Roche, Abbé, Letter to, and drinking Song, 345.
Lead in Distilleries, the pernicious effects thereof, 367. 551.
Leg, the Handsome and Deformed, 321.
Le Roy, Improvements in Navigation, addressed to Monsieur, 518.
Letter to the Abbé Morellet *(la vérité est dans le vin)* 347.
Levée, a paraphrase on the book of Job called the, 307.
Leyden Experiment, on the choice of Glass for the, 402. 439.
Life, Essay on the waste of, 242.
Light and Heat, new and curious Theory of, 560.
Lightning, on Death occasioned by, 403.
Lightning Conductors at Purfleet, Report on the, 388.—Experiments on, 391.—Remarks on, 423.—Effects of Lightning on the Eyes of Animals, 459.—Effects of Lightning on the Steeple of a Church at Cremona, 433. 556.

Magnetism and Electricity, analogy between, 400.
Magnetism of the Earth, 556.
Mankind, Observations on the increase of, 110.—Jackson's Remarks on the same, 115.
Mathematics, on the usefulness of the, 235.
Maxims, Poor Richard's, 248.
Meat rendered tender by Electricity, 405.
Mechanics, effects of Lead on various handicraft, 553.
Medals ordered to be struck by Congress, 254.
Merchants and Trade, Franklin's notions of, 143.
Meteorological and Physical Conjectures, 467. et seq.
Miscellanies, 187.
Moist Air not unhealthy, 422.
Money, the way to make Money plenty, 247.
Morals of Chess, 322.
Morellet's Questions to Dr. Franklin relative to the Militia, 184.
Moths, called Muskitoe Hawks, singular account of, 541.

Navigation, Improvements in, addressed to Mons. Le Roy, 518.
Nairn's Patent Electrical Machine, account of, 459.
National Debt of England, a Catechism relative to the, 97.
New Theory of Light, 560.

Observations on the increase of Mankind, peopling Countries, &c., 110.—On the Spots in the Sun, 398.—Observations made on board the Pennsylvania Packet, 535.—Observations on the Gulph Stream, 548.
Oil on Water, curious instance of the effect of, 363. 424. and seq.
Oxley, indicted for an Assault, 101.

Paper, new method of making large sheets of, 558.
Paper-Money, Remarks on American, 24.—State of the same, 98.
Parable on Brotherly Love, 199.
Ditto against persecution, in imitation of Scripture language, 193.
Pennsylvania, account of its Supreme Court of Judicature, THE PRESS, 303.
Persecution in former ages, 194.
Philadelphia Academy, original intention of the Founders thereof, 283.
Philocles and Horatio, a Dialogue, 221.—A second Dialogue, 225.
Physical and Meteorological Conjectures, 468.
Pigeons killed by Lightning, 555.
Pit-coal, Description of a newly invented Stove for burning, 505
Plan for settling two Western Colonies in North America 27.

Plan for benefiting distant unprovided Countries, 135.
Politics and Commerce, 110.
Poor, Remarks on the Management of the, 123.—On the Laboring, 133.
Poor Richard's Maxims, 248.
Positions to be examined, 140.
Poverty, Remarks on the Institution in Holland to prevent, 159.
Powder Magazines at Purfleet, Report on the Lightning Conductors at the, 388.
Pownall's State of the Constitution of the Colonies, with Franklin's Remarks, 59.
Principles of Trade, by Whately and Franklin, 145.
Pringle, Effects of Oil on Water, in a letter addressed to Dr., 363.—His account of a species of Moth, that lived 71 days after its head was cut off, 451.
Privateering, Remarks thereon, 176.
Provisions made in China against Famine, 142.
Public Men, Remarks on, 229.
Purfleet, Report on the Lightning Conductors there, 388.

Queries from Mr. Strahan to Dr. Franklin, with his Answers, 51.

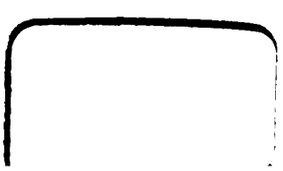
Rain, Observations on, 386.
Reasons and Motives on which the plan of Union of the Colonies was formed, 1.
Reasons against partial Unions, 3.
Reaumur's Thermometer compared with Fahrenheit's, 554.
Religious Subjects, 187.
Remarks on the plan of Union with the Colonies, 19.
Remarks and Facts relative to American Paper-Money, 34.
Retort Courteous, 101.
Rittenhause, Observations on the nature of Fire, addressed to David, 361.
Roche, Bagatelle addressed to the Abbé, 345.
Rooms, a new method of warming, 499.
Rules for reducing a great Empire to a small one, presented to a late Minister, 69.

Salt Water rendered fresh by distillation, (note, 537.)
Savages of North America, Remarks concerning, 271.
Seamen, Remarks on Judge Foster's Report on Impressed, 169.
Sea Coal, Essay on the nature of, 407.
Sea Voyage, Advice to those about to undertake one, 255.
Sea, Waves of the, stilled by Oil, 425.
Self-denial, not the essence of Virtue, 283.
Shirley, Governor, three Letters addressed to him concerning the Imposition of direct Taxes on the Colonies, 20, 21. 25.
Sketch of an English School, 278.

Small's (Dr.) Letter to Franklin on a quotation from Celsus, 418.
Smoky Chimnies, on the causes of, 479.
Smuggling, and its various species, 128.
Songs, a dissertation on Drinking Songs, 347.
Soulavie's Notes on the Theory of the Earth, 454.
Staffordshire Chimnies, description of, 497.
State of the Constitution of the Colonies, by Governor Pownall, 59.
Stoves for public Buildings, Remarks on, 409.—Newly invented, 444.—Stove for burning Pit-coal, and consuming its own Smoke, 505.—Stove which draws downwards, 506.
Strahan's Queries to Dr. Franklin, with the Doctor's Answers, 51.
Sugar Islands, Thoughts concerning them, 169.
Sun, observations on the Spots in the, 398.
Sun and Moon, Gravitation of Bodies affected by the, 475.
Swimming, Answers to Queries on the Art of, 407.

Theory of the Earth, Notes on the, 455.
Thermometers, general remarks on, 554.—Rules for calculating the difference between Fahrenheit's and Reaumur's, 554.
Toads, found in the solid of a Stone-quarry, 449.
Toleration, state of, amongst the Dissenters, 194.
Trade and Manufactures, Note respecting the same, 143.—Notions concerning Trade and Merchants, 143.—Principles of Trade, 145.
Tradesman, Advice to a young, 245.

Various Subjects, Essays on, 200.
Ventilation, a Treatise on, 375.
Vindication and Offer from Congress to Parliament in 1775, 84.

Union of the Colonies, plan proposed, 4.

War, Observations thereon, 131.
Warming of Rooms, by a new method, 499.
Way to Wealth clearly shown, or Poor Richard's Maxims, 248.
Western Colonies in North America, plan for settling two of the same, 27.
Wine, pleasant dissertation on the word, 347.
Winthorp, Astronomical and Electrical Conjectures, addressed to him, 370.
Whately and Franklin's Principles of Trade explained, 145.
Whig principles, recommended by Franklin as good, 185.
Whistle, the, a *plaisanterie*, 317.
Wyvill, Sir Charles, Letter to him on the Elective Franchises enjoyed by the small Boroughs in England, 180.
Wyvill's Answer to Dr. Franklin on the Elective Franchises, &c. 183.